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Monthly Message

It is with a deep sense of responsibility to Armed Forces and civilian medicine, as well as a real appreciation of the efforts of those who under duress forged the basic concepts of this organization, that I have accepted the chairmanship of the Armed Forces Medical Policy Council. Though much has been accomplished, much yet remains to be achieved, and it is heartening indeed to have the support of such leaders in the medical and dental profession as constitute the membership of the Council. One cannot evaluate the activities of this organization without also recognizing the loyal and effective support of the staff whose investigations have laid the groundwork for Council decisions of far-reaching significance.

Our joint responsibility to the Secretary of Defense, and through him to the health of all American men and women in uniform, does not rest lightly on the Council's shoulders and we seek the whole-hearted support of all doctors in the proper discharge of these, our obligations. Close coordination between the services in the solution of mutual problems is a most effective method of obtaining positive results and when this machinery is oiled by a basic spirit of cooperation the possibilities of accomplishment are unlimited.

Medical principles are universal as applied to the abnormal conditions afflicting mankind and yet military medicine must possess that flexibility of application made necessary by the environmental and administrative factors which modify medical care, whether this be the geography of contested areas, the numerical mass of casualties, the specific problems of submarine existence, or the supersonic speed of planes. This requires a broad spectrum of interest and participation on the part of all physicians in uniform, with opportunities for the specialist and the general practitioner alike, and furthermore necessitates a fundamental appreciation for the specific problems of field or applied military medicine.

May I request the continued support of Armed Forces medicine, as represented by the three services, in our joint effort to advance the standards of medical care.

Melvin A. Casberg

Melvin A. Casberg, *M. D., Chairman,*
Armed Forces Medical Policy Council
Office of the Secretary of Defense

The Use of Cortisone in Dupuytren's Contracture

Sterling J. Ritchey, *Lieutenant Colonel, MC, U. S. A.* (1)

ALTHOUGH currently accepted treatment of Dupuytren's contracture is radical resection of the contracted palmar fascia, in some cases, it is not without danger of complications which delay recovery and jeopardize the final result. Complete excision of the contracting mass requires close dissection beneath the skin layer, thus a full-thickness skin graft is laid back down in the palm in the most unfavorable or most distal portion of the palmar flap. Necrosis of skin margins and prolonged wound healing necessitates immobilization until the skin heals. As the result of prolonged immobilization the finger joints become stiff. The alternative procedure of supplying pedicle grafts from the dorsum of the hand is often necessary when the viability of the distal ulnar flap is jeopardized. This requires split-skin grafting on the dorsum of the hand. The result is not cosmetically good and the skin is not adaptable to normal palmar sensation, nor to the normal stress and friction required of the palm.

It was hoped, on the basis of the results obtained in relieving and relaxing connective tissue contractures in other collagen diseases, that cortisone might be of benefit in the preoperative treatment of this condition. It was hoped that cortisone would relieve the extensive involvement between the palmar fascia and the skin, assure vascularity of the palmar flap, and thus facilitate surgical resection. Two patients with well-established Dupuytren's contractures of both palms were treated with cortisone. One patient had early Dupuytren's contracture in the remaining unresected fascia a few weeks after partial resection of the palm. The other patient had severely involved hands, the contracture being present for many years with extensive skin involvement in the palm.

CASE REPORTS

Case 1. A 49-year-old man was seen in consultation on 19 July 1950, at which time a moderate Dupuytren's contracture of the ring and little fingers of both hands was present. Surgical resection was recommended.

(1) U. S. Army Hospital, Fort Dix, N. J.

On 25 July, through 3 short transverse incisions over the course of the fascia of the right ring finger, a contracted palmar fascia along this ulnar portion of the palm was excised. Small drains were removed in 24 hours and on 7 August primary healing had occurred.

On 17 August the ulnar half of the palmar fascia of the more severely involved left hand was excised through a routine incision along the distal palmar crease. The incision was turned bluntly along the ulnar border of the hand to the base of the palm. The thickened palmar fascia was excised en bloc from the base of the palm distally. The process had involved the skin in the distal palmar crease and only full-thickness skin was retained. Dissection was continued well down into the ring and little fingers and a midlateral longitudinal incision was made in the little finger to complete the excision. Small rubber drains were inserted and were removed in 48 hours. Except for a small necrotic area about 5 mm. in diameter at the angle of the palmar flap which delayed mobilization, the hand progressed satisfactorily. The wound finally healed and occupational therapy was begun at the end of the fourth week; movement returned slowly. Some residual contracted and thickened palmar fascia remained in the right ring finger; this was resected through a midlateral incision on 19 October and this wound also healed without complications. By 1 November about 10 weeks after the operation, the radial portion of the palmar fascia of the left hand had developed definite evidence of Dupuytren's contracture (fig. 1). The radial side of the palmar fascia had not been involved previous to the excision of the ulnar half, and it was believed that it could be safely left in the palm. Inasmuch as the viability of the flap was questionable, additional dissection seemed inadvisable. Cortisone therapy was begun on 5 January 1951, 100 mg. being given every 8 hours for 3 doses, followed by 100 mg. every 12 hours for 2 doses, then 100 mg. daily. Within 5 days some softening of the indurated areas occurred and the patient noticed marked improvement in the stiffness of the fingers of both hands and for the first time he was able to make a tight fist with his right hand.

By early February the improvement in the palm was definite and the thickened fascia was difficult to palpate (fig. 2). The final operation was performed on 27 March. Cortisone therapy was discontinued at this time. The radial half of the palmar fascia was excised through a transverse incision in the distal palmar crease, carrying the dissection proximally and distally through this incision. The contracted fascia was easily isolated, did not seem to be involved with any extensive scarring, and was mobilized without difficulty. The wound healed without incident, the range of motion in the hand continued to improve, and by mid-May there was complete softening of both palms and full extension of all finger joints. Microscopic examination of the tissue revealed fibrosis of the palmar fascia (Dupuytren's contracture) and bundles of dense collagenous fibrous tissue with occasional flattened fibroblasts. Between the collagenous bundles there were small blood

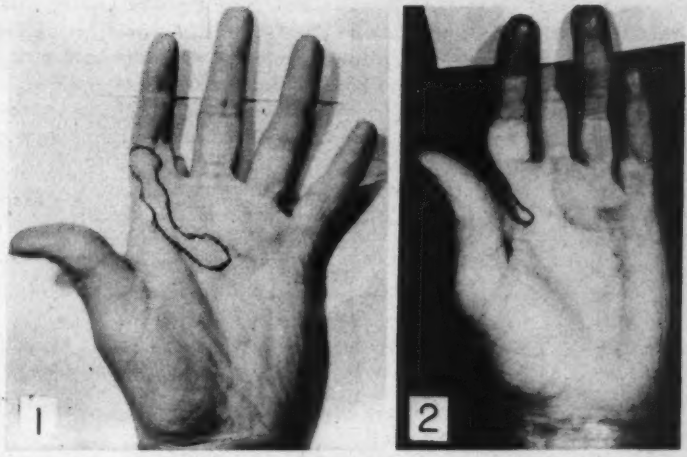

Figure 1 (case 1). Photograph taken on 12 January 1951 showing postoperative condition of hand before cortisone therapy. The palpable mass is outlined. Figure 2 (case 1). Photograph taken on 2 February 1951 showing shrinkage of contracture mass after 4 weeks of cortisone therapy.

vessels surrounded by scant lymphocytic infiltration. No aberrations of the microscopic picture that could be attributed to cortisone therapy were noted.

Case 2. A 60-year-old man was admitted on 23 October 1950. He stated that he had first noticed contractures in both hands in 1938. He remembered sustaining a rather minor contusing blow to the right palm and a minor squeezing injury to the left palm in 1937, but the injuries were trivial and the hands were normal between the time of these injuries and the time the contractures started. Since the onset, the contractures had gradually progressed without any known relationship to injury or illness. The deformities had begun in the little finger in both hands and gradually involved the fingers in sequence toward the radial side of the palm. Examination on 8 December revealed a typical severe Dupuytren's contracture in both hands (fig. 3). The right little finger could extend only 2 inches from the palm to the fingernail tip; the metacarpophalangeal joint of this finger extended actively and passively only to 110 degrees and the proximal interphalangeal joint to 100 degrees. The right ring finger extended to 140 degrees at the metacarpophalangeal joint; the right middle finger to 150 degrees at the same joint; and the right index finger to 155 degrees at the same joint. The interphalangeal joints of the 3 radial fingers extended completely. The palm presented a hard, fixed mass palpable throughout the thickened palm from its base and into the little finger. It did not extend into the remaining fingers, but the entire breadth of the palm was depressed, deeply adherent, and severely involved at the distal palmar

crease. The mass involved the skin and there was blanching of the palmar skin on forced extension of the fingers. The left little finger could only be extended passively 1½ inches from palm to fingernail tip. The patient was just able to slip a lead pencil between the palm and the finger tip. The fifth metacarpophalangeal joint extended to 110 degrees and the proximal interphalangeal joint of this finger extended only to 110 degrees. The distal interphalangeal joints of all fingers extended completely. In the ring finger the metacarpophalangeal joint extended to 150 degrees, the interphalangeal joint extended completely, and the remaining 2 fingers extended completely. The contracture mass in the palm was almost identical to that of the right hand. There was more skin involvement at the base of the left little finger and linear cords were palpable immediately beneath the skin in both hands. The skin in the proximal finger segments of the little finger of both hands was shortened.

Intramuscular cortisone therapy was started on 5 January 1951, 100 mg. being given 3 times in the first 24 hours, twice the next day, and then 50 mg. twice daily. Cortisone was continued until 26 March but intramuscular injections were discontinued and starting on 8 February it was given by mouth. There were no symptoms attributable to the drug except transient dizziness which subsided spontaneously in a few days. The hands were observed and measured at frequent intervals. Although the patient noticed more improvement in the hands than was clinically evident, it was believed that there was some gradual improvement in the nutrition of the skin and some mobilization of the skin from the contracture mass. The right hand seemed to improve more rapidly than the left and this was the hand that was less severely involved when originally examined. Two months later the patient could extend the right fifth fingernail 2-1/8 inches from the palm. The metacarpophalangeal joint of the little finger extended 5 degrees more and the proximal interphalangeal joint extended 10 degrees more than at the original examination. It was believed that there had been some palmar softening and the deep sulcus representing the distal palmar crease had become more shallow.

On 9 March, under pneumatic tourniquet control, the contracture of the right hand was resected through a classical transverse distal palmar incision which curved on the ulnar side of the palm to extend to its base, the diseased fascia mass was resected en bloc distally, and the dissection was completed through a midlateral incision over the proximal half of the little finger. Dissection was very close beneath the skin on the ulnar half of the flap and there was questionable viability of this skin at completion of dissection. There was nothing unusual about the appearance of the palmar fascial mass. A small rubber drain was placed in the wound for 48 hours. The sutures were removed 11 days later. A small avascular area of skin that developed at the tip of the palmar flap required additional immobilization and pressure until the end of the third postoperative week. One month later there

was full extension in both metacarpophalangeal joints and the proximal interphalangeal joint of the little finger extended to 120 degrees. Limitation seemed to be the result of skin shortening. Cortisone was given throughout the postoperative period without interruption and there was no apparent delay in skin healing in the areas with good blood supply.

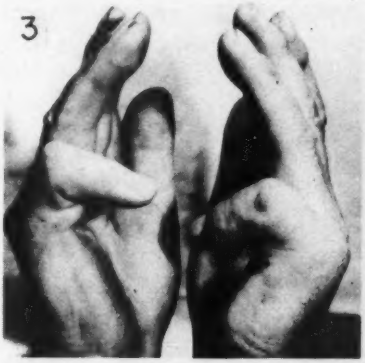

Figure 3 (case 2). Photograph taken on 5 January 1951 showing maximum extension of hands before treatment. Figure 4 (case 2). Photograph taken on 18 May 1951 showing postoperative condition of hands before cortisone therapy.

During this time, there was no appreciable change in the condition of the left hand. The metacarpophalangeal joint of the left little finger extended 1-7/8 inches from the palm, a 3/8-inch increase. The metacarpophalangeal joint extended to 120 degrees, an increase of 10 degrees, and the proximal interphalangeal joint extended to 110 degrees, which represented no change. On 29 March, 3 days after the cortisone was discontinued, the contracture mass was excised from the left hand in a similar manner. Again there was nothing unusual about the operative findings. The fascia was markedly contracted and was adherent proximally to the transverse carpal ligament and required excessive dissection of hypothenar and lumbrical muscle fascias and the mass extended well into the little finger. Again the dissection required leaving questionable skin at the border of the flap because of the involvement of the subcutaneous tissue. There was a small postoperative slough in the corner of the flap, about 2 by 10 mm. in size, which required prolonged immobilization and pressure dressing of the palm until the end of the third postoperative week. The area at that time was well crusted and clean and mobilization was gradually accomplished. The left palm remained greatly thickened with dusky circulation in the palmar flap. Marked induration persisted. Mobilization of the fingers was considered to be slow. Postoperative swelling, edema, and scarring were much more apparent in the left palm than in the right and no

increased extension at the metacarpophalangeal joint was observed beyond the immediate postoperative correction (fig. 4). On 18 May, 7 weeks after operation, cortisone therapy was reinstituted because of persistent induration and thickening of the left palm and stiff finger joints. Within 21 days there was an apparent improvement in the condition of the palm. The soft tissue could be moved freely in the palm. The edema subsided and the duskiness of impaired circulation in the palmar flap disappeared. Cortisone was given for 5 weeks at the end

Figure 5 (case 2). Photograph taken on 24 July 1951 showing appearance of hands following postoperative cortisone therapy.

of which time the induration had almost completely subsided and the fingers were mobilized gradually. On 1 August all joints extended completely, except the proximal interphalangeal joints of both little fingers, the right extending to 140 degrees and the left to 130 degrees (fig. 5). The patient was pleased with the result, was conscious of continuing improvement, and thought that the fingers would be straight for all practical purposes in a few more months. He stated that he was able to wear gloves for the first time in 13 years.

Microscopic examination of the tissue from both palms revealed bundles of dense collagenous fibrous tissue with occasional flattened fibroblast nuclei. Between these bundles were small blood vessels surrounded by a scant lymphocytic infiltration. The pathologist believed that there were no atypical changes which would distinguish this tissue from tissue not treated with cortisone.

On 7 September the patient was considered ready for duty. The right fifth proximal interphalangeal joint extended to 140 degrees and the left fifth proximal interphalangeal joint extended to 135 degrees. The skin of the palm around the incisions was soft and movable. There was slight thickening at the corner of the ulnar flap on the left hand.

The sole block to full extension was the moderate tightness and shortening of the skin over the proximal finger segments of the little finger of both hands.

DISCUSSION

Case 1 is illustrative of Dupuytren's contracture treated by cortisone in a stage usually not seen by the physician, the contracture being of very short duration. It was my impression that the benefit from cortisone in this patient was more marked than seen in the fixed and late contractures of the second patient. This seems logical because the contracture process was not fully advanced and should be more susceptible to any blood-borne agent. The most striking result, however, was the beneficial result noted in the hand which had been operated on without previous cortisone therapy. The patient stated that range of motion through the finger joints in his other hand had markedly improved while under preoperative treatment for the hand not operated on. There was definite palpable change in the contracture mass, however, which is not easily discernible from photographs. On the basis of clinical impression only it was thought that the contracture was more easily resected as a result of cortisone therapy.

In case 2 the contracture was of many years' duration and responded much more slowly and much less objective improvement was noted. The skin healing apparently was not influenced by cortisone therapy during the postoperative period, and again the most striking benefits were related to the postoperative loosening of the finger joints. These severely contracted hands, which required extensive and radical resection, each complicated by delayed wound healing, mobilized much more rapidly than similar hands treated previously without cortisone.

In neither patient was there any untoward effects from using cortisone in the indicated dosages. Both patients stated that they were able to work longer hours without fatigue and had a general feeling of well-being, though not to the point of euphoria. One patient (case 2) complained of transient dizziness and restlessness during the early phase of his treatment but this subsided spontaneously. The other patient (case 1), during his course of preoperative cortisone therapy, brought to the examiner's attention the fact that a skin rash on his lower leg had completely cleared up. This rash had been present for about 15 years, had been repeatedly treated with little success by dermatologists, and was thought to be "stasic dermatitis." There was no recurrence of this rash during the period of observation, nearly 3 months after the cessation of cortisone therapy.

SUMMARY

Two patients with Dupuytren's contracture were treated with cortisone. One had an early disease process and the other very late and severe contractures. Cortisone appeared to be of limited value as a preoperative medication and probably of value only in the very early

stages of the disease. The benefits to the patient with severely contracted hands were minimal and did not seem to justify the prolonged treatment necessary to improve these hands only slightly before operation. There was definite evidence in our cases of the drug's value in the postoperative treatment of these hands and its use is believed justified because of the definite and marked improvement in the postoperative mobilization of the hand. There is no evidence that cortisone in itself will supplant the accepted methods of surgical resection of Dupuytren's contracture. It does, however, offer possibilities as a valuable adjunct in the postoperative rehabilitation of patients with Dupuytren's contracture.

BOOK REVIEW

Decompression Sickness, Caisson Sickness, Diver's and Flier's Bends and Related Syndromes, Compiled under the auspices of the *Subcommittee on Decompression Sickness, Committee on Aviation Medicine, Division of Medical Sciences, National Research Council,* Washington, D. C. 21 contributors. 437 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publishers, 1951.

This book is a compilation of the work resulting from the requests of the U. S. Armed Forces to the National Research Council made in April 1942 to study the problem of decompression sickness as experienced by flying personnel. The direction given by the Chairman of the Division of Medical Sciences, National Research Council to the Subcommittee appointed to accomplish this study illustrates well the scope of the book: "The Subcommittee will be expected to study decompression sickness from a broad biological standpoint with the view of elucidating the factors involved in bubble formations in tissues and devising ways and means of minimizing the dangers arising from aeroembolism." The book contains the work of 21 investigators representing some of the foremost laboratories in this country interested in the problems of aviation, physiology, and medicine. No new major discoveries resulted, but the studies have added extensive and valuable quantitative data relative to the influence of exercise, age, degree of obesity, and environmental conditions on the incidence of symptoms. Many new details have been added to our knowledge of altitude sickness and denitrogenation has been established as an effective preventive measure in altitude decompression sickness. This book contains a wealth of information and will serve as an excellent supplement to the standard texts on aviation and submarine medicine. It will make a valuable addition to every Flight Surgeon's library.

—Col. W. D. Preston, U. S. A. F. (MC)

Rheumatic Carditis and Hemorrhagic Pneumonitis Treated With ACTH

Report of a Fatal Case

Charles E. Shopfner, *Captain, U. S. A. F. R. (MC)* (1)

Marvin Seife, *Captain, U. S. A. F. R. (MC)* (1)

ACTH and cortisone are being used by many in the treatment of acute rheumatic fever (2-9). A full evaluation of the hormone's over-all effectiveness on the rheumatic process, however, will require a long period of control study. The following report is unique as death from acute rheumatic fever occurred despite what is considered adequate ACTH therapy.

A 19-year-old man was admitted to the hospital on 20 February 1951 because of pharyngitis, malaise, headache, and chills and fever of 24

(1) United States Air Force Hospital, Lowry Air Force Base, Denver, Colo.

(2) Hench, P. S., et al.: Effects of adrenal cortical hormone 17-hydroxy-11-dehydrocorticosterone (compound E) on acute phase of rheumatic fever; preliminary report. Proc. Staff Meet., Mayo Clin. 24: 277-297, May 25, 1949.

(3) Hench, P. S.; Slocumb, C. H.; Polley, H. F.; and Kendal, E. C.: Effect of cortisone and pituitary adrenocorticotropic hormone (ACTH) on rheumatic diseases. J. A. M. A. 144: 1327-1335, Dec. 16, 1950.

(4) Wilson, M. G., and Helper, H. N.: Effect of pituitary adrenocortico-tropic hormone (ACTH) in acute rheumatic carditis. J. A. M. A. 145: 133-138, Jan. 20, 1951.

(5) Massell, B. F.; Warren, J. E.; and Sturgis, G. P.: Observations on effects of ACTH in patients with rheumatic fever and rheumatic carditis. In Mote, J. R. (editor): Proceedings of the First Clinical ACTH Conference, Philadelphia, Pa. The Blakiston Co., Philadelphia, Pa., publishers, 1950.

(6) Massell, B. F.; Warren, J. E.; and Sturgis, G. P.: Clinical response of rheumatic fever and acute carditis to ACTH. New England J. Med. 242: 641-647, Apr. 27, 1950; 692-698, May 4, 1950.

(7) Massell, B. F.: Salicylates, hormones, and penicillin in treatment of rheumatic fever. M. Clin. North America 34: 1419-1434, Sept. 1950.

(8) Massell, B. F., and Warren, J. E.: Effect of pituitary adrenocorticotropic hormone (ACTH) on rheumatic fever and rheumatic carditis. J. A. M. A. 144: 1335-1341, Dec. 16, 1950.

(9) Barnes, A. R., and Smith, H. L.: Effects of administration of cortisone and ACTH on patients with acute rheumatic fever. Mod. Concepts Cardiovas. Dis. 19: 59-60, Feb. 1950.

hours' duration. Past history revealed that in January 1947 the patient had a similar attack of pharyngitis which was followed by migratory polyarthritis. A diagnosis of acute rheumatic fever was made and the patient was treated with a sulfonamide, sodium bicarbonate, and salicylates. He improved rapidly, but was kept at complete bed rest for a period of 4 months until his sedimentation rate had returned to normal.

On admission, vague right hip pain, especially with weight bearing, was present. The temperature was 102° F. and the patient appeared acutely ill. His pharynx was slightly injected. On percussion the heart was not enlarged and the sounds were clear and regular. A mitral systolic murmur, which increased markedly in intensity with exercise, was heard with the patient in sitting and lying positions and was transmitted to the left axilla.

The leukocyte count was 11,800 with 80 percent neutrophils and 20 percent lymphocytes. The hemoglobin was 12.6 grams. A roentgenogram of the chest was normal. The sedimentation rate, Wintrobe corrected, was 23 mm. An electrocardiogram on 2 occasions revealed a rate of 80 per minute, a P-R interval of 0.24 seconds, sinus arrhythmia, and a flat T-3.

On the eighth hospital day, the patient developed a warm, painful right elbow joint. It was believed that he had active rheumatic fever as the findings included an organic mitral systolic murmur, polyarthritis, increased sedimentation rate, fever, hospitalization several weeks prior to his present admission because of pharyngitis, prolongation of the P-R interval, and a previous history of rheumatic fever. On 2 March 1951, 20 mg. of ACTH were given intramuscularly every 6 hours. Three grams of potassium chloride were given orally each day and the patient was placed on a low salt diet. He was mildly euphoric 48 hours after the administration of the ACTH. The sedimentation rate became normal 8 days after the onset of therapy.

On 12 March the ACTH was reduced to 15 mg. every 6 hours. There was no change up to this time in the P-R interval nor in the mitral systolic murmur. However, because of the daily temperature elevation up to 99° F., 300,000 units of aqueous procaine penicillin were given daily. On 15 March, because of no change in the carditis, the ACTH was increased from 15 to 25 mg. every 6 hours. The patient developed a right epididymitis on 24 March which was treated with local support, 300,000 units of aqueous procaine penicillin, daily, and 1 gram of sulfadiazine q. i. d. The epididymitis subsided within 4 days and the sulfadiazine was discontinued, but 300,000 units of penicillin in oil were given twice weekly prophylactically along with the ACTH therapy throughout his hospital course. During the latter part of March, the patient gradually developed a typical moonface. On 4 April, because of the persistence of the mitral systolic murmur and a recently developed Wenckebach phenomenon, ACTH was discontinued intramuscularly and started intravenously, 25 mg. of the hormone being placed in a liter of

5 percent dextrose in water and given for 12 hours each day for 4 days. (We hoped to observe whether the recently developed Wenckebach phenomenon or the murmur would be affected.)

On 8 April the ACTH was discontinued because the moonface was so pronounced. That night the patient began to cry and complain of knee pain but examination revealed no edema, redness, or pain to point pressure. It was believed that the mental symptoms were associated with ACTH therapy. Three grams of potassium chloride in 1,000 cc. of 5 percent dextrose in water were then given intravenously. Because of persistent crying spells and complaints of knee pain this was repeated on 9 April. On 10 April the patient's temperature rose to 102° F. His mental picture had greatly improved but he still complained of pain in both knees, but he was able to place both heels on the gluteal region. The crying ceased. The leukocyte count was 13,100 with 42 percent neutrophils. On 11 April the patient's temperature had risen to 104° F. without any specific complaints other than knee pain; and 300,000 units of aqueous procaine penicillin daily was started. No findings were noted on complete physical examination. He had developed marked anorexia and dextrose with supplementary vitamin B-complex was given intravenously. The leukocyte count was now 14,450 with 82 percent neutrophils. Physical examination later the same day revealed fine crackling rales at both lung bases. A roentgenogram of the chest showed small densities throughout the lower portion of both lungs (fig. 1). It appeared that the patient had developed a diffuse pneumonitis and penicillin therapy was changed to 100,000 units of crystalline penicillin intramuscularly every 3 hours. Because of a mild cyanosis, the patient was placed in an oxygen tent. He continued to have a temperature elevation up to 103° F. On 12 April examination of the lung fields revealed bilateral moist rales from apex to base. The leukocyte count was 16,950 with 80 percent neutrophils. With paroxysms of cough, he brought up a small amount of pink sputum. There were no signs of congestive failure. A repeat chest roentgenogram revealed the lungs studded with small densities from apex to base (fig. 2). Because of the severe illness of the patient and the poor prognosis, all available antibiotics in adequate doses were immediately instituted. His marked dyspnea, cyanosis, and stupor persisted despite oxygen and antibiotic therapy. During the midafternoon of 12 April he developed Cheyne-Stokes respiration. Various respiratory stimulants were of no avail and the patient died. Final culture of his sputum revealed no acid-fast bacilli nor any organisms other than gamma streptococcus (non-hemolytic).

Autopsy was performed 3 hours after death. The heart weighed 374 grams and appeared dilated. Several small petechial hemorrhages were noted over the anterior surface of the epicardium. The muscle was universally pale, reddish yellow, and flabby. All the valve cusps were thin and delicate and there was no evidence of fusion, nodularity, or rolling. The valve rings measured as follows: Aortic, 6 cm.; pulmonic, 7 cm.; mitral, 11 cm.; and tricuspid, 12 cm. Microscopically, polymor-

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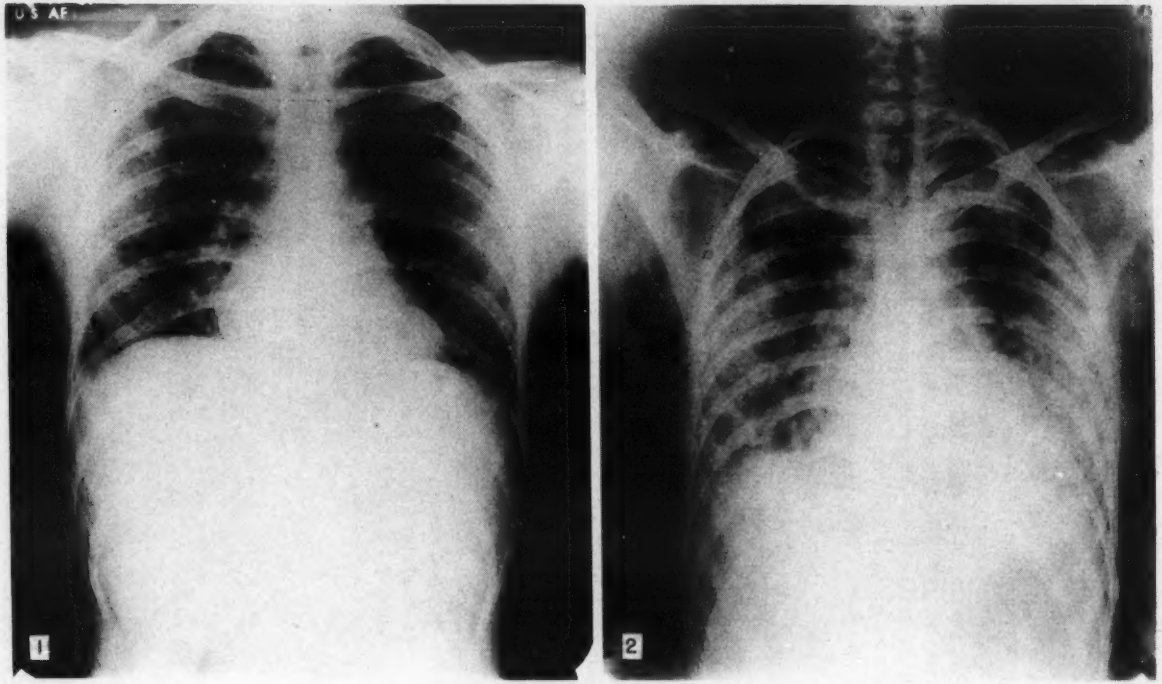

Figure 1. Roentgenogram showing several small densities throughout both lung fields 24 hours prior to death. Figure 2. Roentgenogram showing small, rounded shadows ***studded throughout both lung fields 4 hours prior*** *to death.*

phonuclear leukocytes were seen near the blood vessels which traversed the fibrous tissue septa between muscle bundles, although no definite Aschoff bodies were demonstrated. Sections through the mitral valve revealed the areolar and collagenous tissue of the valve to be widely separated with a pale, pink-staining homogeneous material. The areolar connective tissue immediately beneath the endothelial surface of the valve showed a granularity and hyaline type of change resembling fibrinoid degeneration.

The right lung weighed 1,000 grams and the left, 925 grams. Both lungs had a dull appearance to the pleura and the surface was finely granular. The entire tracheobronchial tree was filled with a foamy, dark fluid. On cut section, the lung was extremely wet with dark-red blood flowing freely from the cut surface. Microscopically, the alveoli were filled with large amounts of dark-red, homogeneous material and red blood cells. Some alveoli contained large numbers of macrophages which tended to form sheets of cells resembling epithelium. Some of these macrophages contained brown pigment and some were multinucleated. Several alveoli contained 1 or 2 spindle-shaped cells resembling fibroblasts in their peripheral portions. Polymorphonuclear leukocytes were scattered throughout the lung sections and were not arranged in foci. All bronchi were full of blood.

The adrenals appeared slightly enlarged, weighing a total of 30 grams. Section revealed the usual yellow cortex and mucoid medulla without signs of hemorrhage or atrophy. Microscopic sections were normal.

On gross examination, the right epididymis was thickened and firm. The right testis on section showed fibrosis and hyalinization of the seminiferous tubules with a heavy infiltration of lymphocytes, plasma cells, and a few polymorphonuclear cells. There was an increase in fibrous tissue about the epithelial elements of the rete testis and the epididymis.

The anatomical diagnoses were rheumatic myocarditis, active; rheumatic valvulitis, active, mitral valve; hemorrhagic pneumonitis (rheumatic), all lobes, both lungs; orchitis, chronic, right, cause undetermined.

DISCUSSION

The initial, nonspecific signs and symptoms of acute rheumatic fever in this patient cleared rapidly on ACTH therapy. However, there was no change in the carditis as noted by the persistence of the mitral systolic murmur and the prolonged P-R interval. The daily dose of ACTH was increased to 100 mg. intramuscularly at the end of 13 days to determine if this would reverse the latter. With no improvement on this dosage after 20 days, the hormone was given intravenously in the hope that maximum adrenal cortical stimulation would be achieved and the muscle "escape phenomenon" eliminated. The ACTH was discontinued and the patient died 4 days later. On postmortem examination the fulminating

pneumonitis was found to be hemorrhagic in type and consistent with that ascribed to rheumatic fever although a viral cause could not be ruled out (*10*, *11*).

This case suggests that ACTH is of value in suppressing the acute symptoms of rheumatic fever but has no effect in reversing or terminating the rheumatic process. The condition of valve cusps suggests that ACTH may prevent scar-tissue formation in healing.

It is possible that the abrupt withdrawal of the ACTH, before the active process of the disease had run its course, produced a relative adrenal cortical insufficiency and caused the explosive recurrence of symptoms. Replacement therapy with tapering-off doses of cortisone might have prevented this supposed adrenal cortical insufficiency.

SUMMARY

A fatal case of acute rheumatic fever and hemorrhagic pneumonitis is presented. ACTH therapy did not appear to improve the course of the disease.

(*10*) Seldin, D. W.; Kaplan, H. S.; and Bunting, H.: Rheumatic pneumonia. Ann. Int. Med. 26: 496-520, Apr. 1947.

(*11*) Tudor, R. B., and Kling, R. R.: Rheumatic pneumonia. Minnesoto Med. 34: 437-438, May 1951.

BOOK REVIEW

Ruptures of the Rotator Cuff, by *H. F. Moseley,* M. A., D. M., M. Ch. (Oxon.), F. R. C. S. (Eng. & C.), F. A. C. S., Hunterian Professor, Royal College of Surgeons of England; Assistant Professor of Surgery, McGill University; Associate Surgeon, Royal Victoria Hospital, Montreal, Quebec, Canada. Illustrated by *Helen MacArthur.* American Lecture Series Publication No. 106, A Monograph in American Lectures in Surgery. 90 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $6.50.

This monograph on the rotator cuff of the shoulder is well written and illustrated. The plates of the anatomy, lesions, and methods of repair are colored artist's drawings so well done that little study of the text is needed to understand the problem. There are chapters devoted to anatomy, function, clinical signs, and operative procedures. The author records his cases and the results obtained. He concludes that in "extensive ruptures of the rotator cuff * * * nothing is gained in delaying surgical repair once the lesion is recognized. Operative treatment * * * gives almost uniformly excellent results." There is a good list of references.

—*Col. A. W. Spittler, MC, U. S. A.*

Cold Injury

Samuel H. Horton, *Commander, MC, U. S. N.* (1)

WHEN the soft parts are frozen and locally deprived of their blood supply, the condition is termed frostbite. If, however, the soft parts are subjected to a protracted period of nonfreezing hypothermia, the resulting injury is termed trench or immersion foot. Because the basic pathologic changes are similar, both affections will be dealt with as cold injury.

Despite man's ability to survive wide variations in environmental temperature, his internal temperature must be maintained within a narrow range if thermal injury is to be avoided. The severity of injury caused by any given temperature tends to be proportional to the duration of the hypothermic or hyperthermic episode. Thus protracted exposures to temperatures which would not be harmful if sustained for a short time may cause severe damage if allowed to continue for days or even hours. Those men whose feet are constantly wet, whether from snow, rain, or perspiration, and who have no opportunity to change footgear will sustain injury as surely as others immersed in ice water or exposed to continued freezing weather. The most important injurious effects of chilling are the alterative changes that occur in the walls and contents of small blood vessels. A protracted period of mild tissue hypothermia may injure capillary endothelium sufficiently to cause transudation of fluid and edema. Superficially this edema leads to the formation of vesicles and bullas.

If chilling is rapid and severe, the tissue may become ischemic so quickly that evidence of vascular damage does not appear until the temperature rises and circulation is re-established. Intense hyperemia is usually the immediate response to restitution of circulation following hypothermia. The hyperemia is followed by edema as soon as sufficient time has elapsed for plasma to diffuse through the walls of the injured vessels.

During a protracted episode of nonfreezing hypothermia such as causes immersion or trench foot, or following a brief episode of freezing hypothermia such as causes frostbite, the local vascular injury may be so

(1) U. S. Naval Hospital aboard the U. S. S. *Repose* at time of writing this article; now Naval Reserve Officers Training Corps, University of Pennsylvania, Philadelphia, Pa.

severe that the capillaries and even the larger vessels become plugged by tightly packed masses of erythrocytes. The severity of the subsequent changes is determined by the extent and permanence of the ensuing ischemia. If the vascular occlusion is extensive, complete infarction in the form of gangrene takes place. If the necrotic tissue becomes moist and dark it can be inferred that infarction was preceded by or accompanied by some degree of vascular patency. If the necrotic tissue becomes dry and mummified, it can be inferred that vascular occlusion was complete from the beginning.

Although statistics are not available, it is safe to state that cold injury has occurred in thousands of men fighting in Korea. Not all were hospitalized, nor even reached the aid stations. Patients have stated that so many patients with cold injury flooded the forward aid stations that only those with bullas or tissue destruction could be treated. The others returned to the line until they, too, could present evidence of tissue damage. There is a wide variation in individual susceptibility to hypothermia and hyperthermia. Is it possible, therefore, to recognize or prognosticate which persons will most likely suffer cold injury? In any given group of men the first to experience organic damage will be those whose feet are constantly damp and whose tissues are ischemic. Ideally the footgear should be changed as often as the feet become wet. Under the stress of battle and front-line conditions this is not always possible, but, in those persons who suffer from hyperhidrosis, even the change of clothing is of little value for in a short time their feet are wet again. These hyperhidrotics are seen at sick call during the warm months with fungus infections, sore feet, and, occasionally, cellulitis. Heavy footgear causes the feet to appear boiled as they literally "stew in their own juices." On forced marches they experience bruises and bullas. The skin is constantly cool and moist, even in warm weather. In cold weather the perspiration may freeze inside the footgear and the resulting tissue ischemia almost invariably leads to cold injury. This type of nervous, tense, hyperhidrotic person is of little value in cold-weather fighting.

In the winter of 1950 and spring of 1951, 255 patients with cold injury were treated in this hospital. The admitting diagnoses were trench foot, immersion foot, frozen foot, macerated feet, and frostbite. Most of these patients had first and second degree injuries with edema, ischemia, and bullas. A few had gangrene. Nearly every patient gave a history of excessive sweating of the hands and feet. Three of the patients with frostbite had received treatment in this hospital for fungus infections in September 1950.

In the light of this experience we disagree with certain points in the management of these patients prior to their admission:

1. Many were admitted as ambulatory patients. All patients with cold injury, no matter what the degree, should be borne on stretchers. When the footgear was finally removed, the tissue was often unnecessarily macerated, edematous, and secondarily infected.

2. The patients had been allowed to smoke whenever they desired. Any vasoconstriction, such as that caused by nicotine, produces further damage to ischemic tissue.

3. Many patients had had excessive débridement. This resulted in an unnecessary loss of tissue. Even when gangrene seems imminent there is often an astounding recovery so that débridement should be minimal and limited to relieving pressure of large bullas and removal of grossly infected and necrotic bits of tissue.

4. Some patients in whom general measures had been emphasized in treatment were received. They had been placed on a regimen which included heparin, dicumarol, etamon chloride, cortisone, penicillin, and the use of thick occlusive dressings. Local care of the injured parts had been largely ignored. These parts were invariably infected and had recovered little or not at all since their injury. There is no substitute for local care of the frostbitten parts.

In our experience the most valuable single treatment was complete bed rest. The patients were not even allowed to go to the bathroom. If the legs were allowed to hang over the bunk or otherwise be lower than the rest of the body, edema persisted or increased. Elevating the foot of the bed a few degrees increases absorption of tissue fluids. No thick, occlusive bandages or tight dressings were allowed because maceration of the skin and further swelling were seen following such treatment. Every attempt was made to keep the bandages as light as possible. The covers were tented by metal food trays which fitted over the foot of the bed.

In those patients with marked edema and maceration, the feet were immersed for 15 minutes twice daily in tepid aluminum acetate solution (Burow's). One 2.3 gm. tablet dissolved in a quart of water furnished a dilution of 1:40. The solution is mildly astringent and slightly antiseptic. Macerated and dirty wounds could thus be cleansed with a minimum of trauma. The patients invariably stated the parts were less painful after soaking. The parts were dried by patting and never by rubbing. Light bandages or none at all were used. Every attempt was made to keep the affected parts at an even temperature. Local application of heat or cold was strictly forbidden. At first vesicles were left intact, but it soon became apparent that bullas extended laterally and caused undue pressure on the underlying structures. The tops of the bullas were, therefore, aseptically removed to relieve the tension. Nails were almost invariably lost unless the subungual bullas were opened promptly. When cellulitis or lymphangitis was evident or anticipated, penicillin was given. Tetanus toxoid was given routinely unless the records stated that an adequate injection had been given just prior to admission.

Cortisone was suggested in the treatment of second and third degree injuries. We used it in 8 patients, selecting those with actual tissue loss. The dose employed was 400 mg. of cortisone by mouth the first

day, 300 mg. the second day, and 200 mg. daily thereafter. The drug was administered every 6 hours. The patients usually experienced a sensation of tingling, warmth, or pain in the affected parts shortly after each dose. Because this phenomena occurred regularly and was never suggested to the patient prior to treatment, some credence was placed in the response. No matter how clean and dry the ulcers might be, healing appeared to be impaired or prevented by this drug. In a few patients in whom an apparent line of demarcation was noted on admission, there seemed to be slight improvement of vascularity in the affected tissue, but all eventually developed well-marked and irreversible gangrene. If it were possible to administer the drug earlier following injury perhaps it would prove to be of greater value. Although the number of patients treated with cortisone was too small to warrant definite conclusions, it was our impression that the drug was of little or no benefit in the management of cold injury.

DISCUSSION

Robert B. Brown, *Captain, MC, U. S. N. (2)*

Our experience with cold injuries has not been extensive. Most of the injuries seen were relatively mild, but we believe that the clinical impressions which we have gained are well founded. We do not wish to create the impression that we are condemning the use of anticoagulants or vasodilators in the treatment of these patients. Most of the cold injuries we saw were of from 48 to 72 hours' duration at the time of admission to the ship and were in the stage of reaction characterized by swelling and hyperemia. Certainly etamon chloride or priscoline were not indicated at that time. Even in the early stage of cold injury it is questionable whether these drugs should be used. Arena et al. *(3)* studying experimental frostbite in rabbits treated with tetraethylammonium chloride in the acute stage, found that the release of vasospasm caused increased edema and a transient wet type of gangrene in place of the dry gangrene seen in the controls. The use of vasodilators, sympathetic blocks, and sympathectomy to relieve residual vasospasm in the late or rehabilitation stage of treatment is another story.

We did not use anticoagulants, because we believed that the chance of their exerting a beneficial effect, particularly in patients with injuries of from 48 to 72 hours' duration, was minimal. This opinion about the value of anticoagulants in the treatment of cold injury is shared by Baxter and Entin *(4)* who stated that "recent investigations have not

(2) Chief of Surgery, U. S. Naval Hospital aboard the U. S. S. *Repose;* now Chief of Surgery, U. S. Naval Hospital, National Naval Medical Center, Bethesda, Md.

(3) Arena, J. A., Jr.; Gerbasi, F. S.; and Blain, A.: Experimental frostbite; inquiry into effect of sympathetic block using tetra-ethyl ammonium chloride into acute stage. Angiology 1: 492-502, Dec. 1950.

(4) Baxter, H., and Entin, M. A.: Experimental and clinical studies of reduced temperatures in injury and repair in man; effect of cold on vascular elements of human skin. Plast. & Reconstruct. Surg. 5: 193-216, Mar. 1950.

borne out earlier enthusiasm regarding the efficacy of anticoagulant substances in the clinical management of frozen tissues."

A final point in the treatment of these injuries is to be stressed. At the outset we made the rule that no patient with an established diagnosis of cold injury was to be returned to duty which would require further exposure during the current winter months. We were thoroughly convinced that this was the correct policy as we readmitted more and more patients who had been sent back to duty from other medical activities not sharing this view.

BOOK REVIEW

Child Psychiatric Techniques, Diagnostic and Therapeutic Approach to Normal and Abnormal Development Through Patterned, Expressive, and Group Behavior, by *Lauretta Bender,* B. S., M. A., M. D., Professor of Clinical Psychiatry, New York University College of Medicine; Associate Attending Psychiatrist, New York University Bellevue Medical Center; Senior Psychiatrist in Charge of Children's Service of the Psychiatric Division, Bellevue Hospital, New York, N. Y. 335 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $8.50.

Like the two companion volumes on the psychopathology of childhood and on the clinical psychiatric syndrome of childhood which are to be published in the future, this book is based on the study and treatment of the vast number of children who have passed through the children's ward of the psychiatric division of Bellevue Hospital in the past 15 years. The author has brought together an impressive group of articles, both previously published and unpublished, on technics using projective, creative, and group behavior in residential study, diagnosis and treatment of unhappy and disturbed children. Most of these articles are by Dr. Bender and Dr. Paul Schilder. The book begins with an excellent survey of the technics used in child psychiatry. There follows, by way of theoretical consideration, dynamic formulation and well-chosen clinical material, a discussion of visual-motor gestalten, and the various projective, creative, and group behavior technics used at Bellevue Hospital. The latter include abstract art, art and fantasy, graphic art, plaster art, music, creative dance, schoolroom activity, group play, puppet play, and group discussion. Because most of the chapters were originally written as separate articles, there is some repetition of content, but this in no way detracts from the value of the book. It is a welcome addition to the library of child psychiatry and will be of particular value to those working with children in a residential setting.—*Lt. Comdr. R. E. Switzer, MC, U. S. N.*

Armed Forces Medical Library

The Army Medical Library, located in Washington, D. C., has recently become the Armed Forces Medical Library by direction of the Secretary of Defense. Now a joint agency of the three military departments, the Library will continue to serve both as a national medical library and as the central medical library of the Department of Defense. Subject to the authority, direction, and control of the Secretary of Defense (who is advised by the Armed Forces Medical Policy Council on medical and allied activities), the Library will be under the management control of the Secretary of the Army. Its organization will consist of a director, a librarian, an advisory group, and a staff of professional, technical, and clerical personnel.

The director will be an officer selected by the Secretary of the Army, with the approval of the Secretary of Defense, from the medical profession of the Army, Navy, or Air Force. The librarian, a civilian, will be appointed by the director on the recommendation of the advisory group. The advisory group will consist of the director as chairman, a representative from each military department, and not more than 5 nonmilitary members who are prominent either as leaders in medical or health fields or as medical librarians. These civilian members will be appointed by the director, with the approval of the Armed Forces Medical Policy Council. Ordinarily the members will serve no longer than 3 years, with the exception of the chairman, and their terms will be staggered so that some members will be appointed yearly.

In the words of the Secretary of Defense, the Library will be dedicated to the advancement of medical sciences in the United States as a whole, as well as within the Department of Defense.

Duodenal Ulcer in Military Personnel: Studies on Military Effectiveness of the Ulcer Patient

II. Magnitude of the Problem

Eugene L. Hamilton *(1)*
Benjamin H. Sullivan, Jr., *Lieutenant Colonel, MC, U. S. A. (2)*
Eddy D. Palmer, *Lieutenant Colonel, MC, U. S. A. (3)*

THE fact that a large number of military personnel and civilian candidates for military service have duodenal ulcer poses important medical, economic, and social problems for the Armed Forces and for the nation which must supply these forces with men, money, and material. A previous communication has outlined the medical and medicoadministrative aspects of this problem in broad terms *(4)*. We propose to examine in more detail available data concerning the degree to which duodenal ulcer, or a history of ulcer, impairs the military effectiveness of the soldier. The efficiency of such soldiers may be decreased through (1) poor performance of duty because of an active untreated ulcer, (2) time lost by frequent visits to sick call for outpatient care, and (3) time lost on a quarters status and during hospitalization. Accurate data covering certain aspects of the problem are difficult to obtain; only statistics dealing with hospital care and other treatment involving absence from duty are available. Although there is a significant loss of effectiveness by those persons who receive outpatient treatment or no treatment at all, this is believed to be small when compared with that of the hospitalized group. In an effort to avoid the question, "Are gastric ulcer and duodenal ulcer different diseases?", we should prefer to limit this series of articles to duodenal ulcer, but, be-

(1) The Medical Statistics Division, Office of the Surgeon General, U. S. Army.
(2) Brooke Army Hospital, Fort Sam Houston, Tex.
(3) Walter Reed Army Hospital, Washington, D. C.
(4) Palmer, E. D., and Sullivan, B. H., Jr.: Duodenal ulcer in military personnel: studies on military effectiveness of ulcer patient; the problem. U. S. Armed Forces M. J. 3: 455-459, Mar. 1952.

cause much of the available data concerns "peptic ulcer" and because in some records the distinction between gastric and duodenal ulcer is not always made, they will be considered together in this portion of the study.

INCIDENCE

Complete data on the incidence of peptic ulcer in the United States Army are not currently available. There is no way of detecting those persons with symptoms so mild that roentgenographic study is not made. Information regarding those treated only as outpatients is not covered in available statistical reports. Figures concerning persons admitted to treatment facilities with a primary diagnosis of peptic ulcer are presented in table 1. Those admitted for another cause, but also found to have an ulcer, are not included; the addition of this group would increase the number of hospitalized peptic ulcer patients by about 11 percent (16 percent for gastric ulcer and 11 percent for duodenal ulcer for the years 1944 and 1945, combined). It would be reasonable to assume that this percentage holds true for the other years.

TABLE 1. *Admissions for peptic ulcer in the United States Army (total Army) by year, 1937-1948**

Year	Number			Annual rate per 1,000 mean strength		
	Total	Gastric ulcer	Duodenal ulcer	Total	Gastric ulcer	Duodenal ulcer
1937	296	55	241	1.68	.31	1.37
1938	323	72	251	1.76	.39	1.37
1939	383	69	314	2.00	.36	1.64
1940	507	108	399	1.50	.32	1.18
1941	4,004	603	3,401	2.98	.45	2.53
1942	10,935	1,503	9,432	3.37	.46	2.91
1943	23,361	2,411	20,950	3.40	.35	3.05
1944	20,651	1,451	19,200	2.65	.19	2.46
1945	15,285	910	14,375	2.02	.12	1.90
1946	3,345	225	3,120	1.54	.10	1.44
1947	1,666	189	1,477	1.60	.18	1.42
1948	1,829	202	1,627	1.88	.21	1.67
1937-1941	5,513	907	4,606	2.47	.41	2.06
1942-1945	70,232	6,275	63,957	2.76	.25	2.51

*Data for 1942-1948 are preliminary, based on sample tabulations of individual medical records.

ADMISSION TO HOSPITAL AND TO QUARTERS

The figures given in table 1 for the period 1942-1948 are preliminary and are based on sample tabulations of individual medical records; the prewar figures are from the annual reports of The Surgeon General, U. S. Army, and are final.

The annual admission rate showed little change until 1941, when there was a sharp rise, coincident with the large influx of selective service registrants, the rapid expansion of the Army's physical plant, and the great number of troops in training. The highest rates were in 1942 and 1943. The Army was predominantly still within the United States and only relatively small forces were in combat. The fall in admission rates in 1944 and 1945 is entirely accounted for by a decline in the overseas admissions; the rates within the United States remained steady (table 2). It has been stated that the number of admissions for ulcer is much lower among troops in combat than among those in training or rest areas (5,6). Support is given this statement by the observed fall in the admission rate both in Europe and in the Pacific at the time when large numbers of our forces were engaging the enemy. During this period the rates remained essentially constant in Latin America and the United States where there was little activity. The large-scale demobilization in 1945 was undoubtedly responsible for a fall in the rate because many soldiers preferred not to report their symptoms for fear of delaying return from overseas or release from the service.

TABLE 2. *Admissions to hospital and quarters for peptic ulcer by theater or area*

(Annual rate per 1,000 mean strength)

Year	Europe	Pacific	Latin America	U. S.	Total overseas	Total U. S. and overseas
1943	3.38	2.57	2.10	3.73	2.36	3.40
1944	1.35	1.36	1.95	3.89	1.36	2.65
1945	1.15	.79	2.33	3.57	1.04	2.02

The admission rate during the war years (1942-1945) was only slightly greater than during the prewar period (1937-1941). This, however, is almost entirely a result of the inclusion of 1941 in the latter group because if the rates for 1937-1940 (total 1.70; gastric 0.34; and duodenal 1.36) are contrasted with those for 1942-1944 (total 3.07; gastric 0.3; and duodenal 2.77) a marked difference is seen. This may be interpreted as evidence that wartime stress plays a part in the production of ulcer, or as a reflection of the difference between a peacetime professional army staffed by volunteers and a wartime army which includes many unwilling members.

The shift in the ratio of duodenal to gastric ulcers from 5:1 to 10:1 (table 1) is of interest but we are at loss to account for it. Both ratios

(5) Berk, J. E., and Frediani, A. W.: Peptic ulcer problem in the Army. Gastroenterology 3: 435-442, Dec. 1944.

(6) Hussar, A. E.: Ulcer problem among military personnel during World War II and its postwar sequels. Mil. Surgeon 103: 392-396, Nov. 1948.

are within the range reported from civil life *(7)*, but are much lower than those encountered in individual army hospitals: 18:1 *(8)*, 25:1 *(9)*, and 50:1 *(10)*. Multiple admissions of individual ulcer patients with roentgenographic evidence of duodenal deformity but not necessarily an active ulcer may have given a false impression of the total number of duodenal ulcer patients. A similar disparity in the gastric ulcer group is unlikely because the diagnosis would not be made in the absence of gastroscopic or roentgenographic proof of crater formation. This would not, however, account for a changing ratio in the number of duodenal ulcers to the number of gastric ulcers.

Although the proportion of troops unavailable for duty because of peptic ulcer, as reflected in the noneffective rate for this disease, showed a significant increase for the period 1942-1944 (0.42 per 1,000 troops on the average day) as compared with the 1937-1940 period (0.32 per 1,000 troops on the average day), the relative increase was much less than that which occurred in either the admission rate or the rate of disability separation. This would appear to indicate that the effect of the greatly increased admission rate was minimized by a relatively more rapid disposition of patients who could not be salvaged for effective military service.

Data presently available to us concerning the medical rejection of selective service registrants during World War II include peptic ulcer in the category "all diseases of the gastro-intestinal system" and do not specify the rates for peptic ulcer. Current figures, however, are available: 21 of 10,000 draft registrants processed between 1 July and 31 December 1950 were found to be unsuitable for service because of peptic ulcer or a history of peptic ulcer. Of these, 5 per 10,000 were rejected primarily for some coexisting condition so that the actual rejection rate for peptic ulcer was 16 per 10,000 registrants.

DISPOSITION

The total numbers and the annual rates of separation for disability due to peptic ulcer are given in table 3. The data for 1942-1945 are preliminary; they are based on individual reports of separation. Data for 1948 are preliminary and are based on a sample tabulation of individual medical records. The annual rate per 1,000 mean strength varied from 0.37 to 0.54 during the period 1937-1940, trebled in 1941, varied between 1.55 and 2.48 during the war period, and fell in 1948 to the prewar level of 0.5. During 1937-1941 and in 1948, the number and rate of separations for duodenal ulcer were 10 times as great as for gastric

(7) White, W.: Incidence of gastro-duodenal ulcer. In Sandweiss, D. J.: Peptic Ulcer. W. B. Saunders Co., Philadelphia, Pa., 1951. p. 186.

(8) Flood, C. A.: Peptic ulcer at Fort George G. Meade, Md. War Med. 3: 160-170, Feb. 1943.

(9) Zetzel, L.: Experiences with peptic ulcer in army station hospital. Gastroenterology 3: 472-479, Dec. 1944.

(10) Thomas, H. M., Jr.: Peptic ulcer in the Army. South. M. J. 36: 287-291, Apr. 1943.

ulcer. Data dealing with this aspect are not available for the years 1942-1947. During 1942-1945, a total of 53,450 persons were separated from the Army for physical disability due to peptic ulcer. The modes of disposition of peptic ulcer patients during the war years are outlined according to their frequencies in figure 1 and table 4. The case fatality rate for gastric ulcer, 1.4 percent, was about 7 times that for duodenal ulcer, but 75 percent of the admissions for duodenal ulcer resulted in separation from the service in contrast to only 52.5 percent of those admitted for gastric ulcer. The proportion of patients returned to duty decreased throughout the war until by 1945 only 12.6 percent of patients hospitalized with duodenal ulcer were returned to duty. Termination of hostilities and rapid demobilization of the Army in 1945 undoubtedly played an important part in increasing the proportion of medically discharged patients. Many patients who had recovered from active ulcer disease and presumably were capable of returning to duty, but who were eligible for administrative separation from the service, were discharged for physical disability. This is particularly evident in the group of patients with gastric ulcer; 58.4 percent were returned to duty in 1942, but only 21.4 percent in 1945.

TABLE 3. *Separations for disability due to peptic ulcer in the United States Army (total Army) by year, 1937-1948**

Year	Number	Annual rate per 1,000 mean strength
1937	65	.37
1938	69	.38
1939	103	.54
1940	143	.43
1941	1,730	1.29
1942	5,039	1.55
1943	17,054	2.48
1944	16,444	2.11
1945	14,913	1.97
1948	489	.50
1937-1941	2,110	.95
1942-1945	53,450	2.10

*Data for 1942-1945 are preliminary, based on individual reports of separation. Data for 1948 are preliminary, based on sample tabulation of individual medical records.

DISCUSSION

The data presented demonstrate that peptic ulcer is an important cause of manpower loss to the Army through draft rejection, hospitalization, and separation for physical disability. The significantly low

peptic ulcer admission rate observed among those actively engaged in combat may be evidence that the irregular living conditions of field duty and subsistence on field rations do not invariably result in recurrences. It cannot be denied that the emotional stress and other factors associated with combat play an important role in the develop-

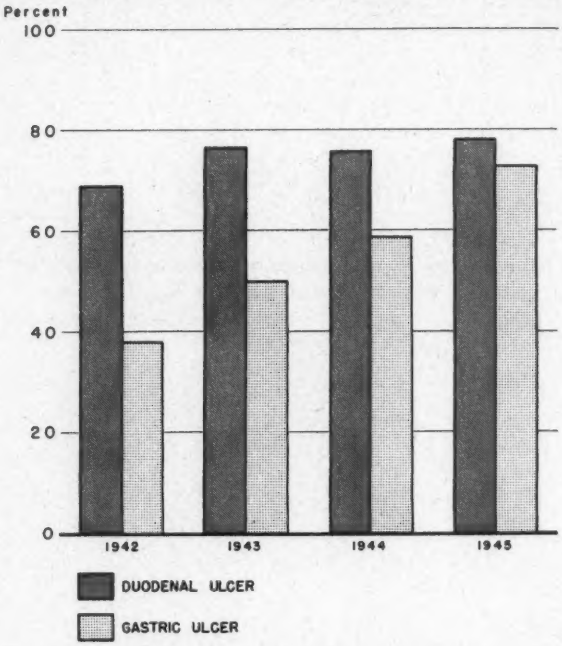

Figure 1. Percentage of admissions of peptic ulcer patients resulting in disability separation from the service.

ment of active peptic ulcer in some persons. It is equally true that many ulcer patients served through the entire war period in combat, without symptoms, and experienced a recurrence of their disease only after hostilities ceased. The pressure of combat and the desire of many of these men to remain with their unit and to do their share may have caused some to "tough it out" in the presence of symptoms which would have caused prompt hospitalization in the less engrossing training situation. Whether this suppression of symptoms occurred in the presence of active disease cannot be known, but it is common knowledge that active ulcer disease eventuating in hemorrhage or perforation may occur in asymptomatic persons.

Studies were made during the war in an effort to determine the proper disposition of soldiers with peptic ulcer. Even though most were made from the vantage point of large military hospitals, they could not in-

clude follow-up of individual patients for more than a few months. Impressions of high recurrence rates resulted from observations of patients repeatedly hospitalized within a short period. In general, the conclusions expressed by various authors were similar: Regular Army soldiers with peptic ulcer might be returned to duty without undue risk of repeated hospitalization. Nonvolunteers were poor risks for return to duty because of the high rate of rehospitalization. In this latter group, subjective complaints and occasionally roentgenographic evidence of disease were apt to persist until the patients were assured of release from service (5, 8). In many instances an associated anxiety state was diagnosed.

The data here presented tend to support these contentions: When the Army was composed entirely of volunteers, 1937-1940, the annual rate

TABLE 4. *Percentage distribution of admissions for peptic ulcer in the United States Army (total Army) by type of disposition and by year, 1942-1945**

Type of disposition	Year of admission				
	Total 1942-1945	1942	1943	1944	1945
Total dispositions (all peptic ulcers)	100.0	100.0	100.0	100.0	100.0
Death	0.3	0.5	0.3	0.3	0.2
Disability separation	73.0	64.4	73.2	73.3	77.8
Duty	24.6	34.4	25.9	26.2	13.0
Other and unknown	2.1	0.7	0.6	0.2	9.0
Total dispositions (gastric ulcers)	100.0	100.0	100.0	100.0	100.0
Death	1.4	2.2	1.4	1.0	0.5
Disability separation	52.5	37.9	50.2	59.0	72.6
Duty	44.9	58.4	48.3	39.8	21.4
Other and unknown	1.2	1.5	0.1	0.2	5.5
Total dispositions (duodenal ulcers)	100.0	100.0	100.0	100.0	100.0
Death	0.2	0.3	0.2	0.2	0.2
Disability separation	75.0	68.5	76.1	74.5	78.0
Duty	22.6	30.6	23.1	25.2	12.6
Other and unknown	2.2	0.6	0.6	0.1	9.2

*Preliminary data based on sample tabulations of individual medical records

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per 1,000 mean strength was 1.7 admissions and 0.43 disability discharges for peptic ulcer. Corresponding rates during the war years 1942-1944 were 3.07 admissions and 2.15 disability discharges for peptic ulcer. In the postwar year 1948, the rates were 1.88 admissions and 0.5 disability discharges. Although Army Regulations do not require it, official policy has sanctioned an understanding that most patients with proved peptic ulcer are to be discharged from the service. Most physicians in military hospitals have been convinced that the peptic ulcer patient will continue to be symptomatic and to seek refuge in medical installations until he secures his release from the service. This attitude cannot be disputed on the basis of the present data, nor do the data prove the thesis. There may, instead, be a reflection here of the physician's attitude toward the disease entity as a whole, rather than toward its manifestations in the individual patient. It is likely, too, that some patients with certain constitutional disorders warranting discharge were separated with inactive ulcer as the separation diagnosis because this could be effected with less administrative difficulty than separation through a "369 board" or other administrative procedure. Until current inability to identify the exact etiologic factors precipitating peptic ulcer in the individual patient is overcome, it would seem well to attempt differentiation of those patients whose primary problem is psychogenic but who also have a peptic ulcer from those who have a peptic ulcer but no evident emotional problem. If proper grounds are found for separation for psychiatric or constitutional disorder, it would seem inconsistent to ignore the causative factor and take action only on the transient manifestation, the ulcer.

SUMMARY

Peptic ulcer is an important cause of manpower loss for the Army:

1. Through draft rejection: 21 per 10,000 registrants during the period July 1950 through December 1950.

2. Through hospitalization: 5,513 admissions in the period 1937-1941 and 70,232 admissions in the period 1942-1945, an annual rate of 2.47 per 1,000 mean strength for the first period and 2.76 for the second.

3. Through separation from the service for disability: 2,110 in the period 1937-1941 and 53,450 in the period 1942-1945, an annual rate of 0.95 for the first period and 2.1 per 1,000 mean strength for the second.

Losses during the war years, 1942-1945, were proportionately somewhat greater than during the mobilization and training year 1941 and much greater than during the period 1937-1940 when the Army was composed entirely of volunteers. The 1948 rate for admissions due to peptic ulcer and disability separations for peptic ulcer corresponded with the much lower 1937-1940 rates. Admission rates for peptic ulcer were significantly greater among troops in training and in inactive areas than among troops actively engaged in combat.

The Use of Corticotrophin (ACTH) and Cortisone in Urticaria and Dermatitis Venenata

Gordon H. Ekblad, *Captain, MC, U. S. N.* (1)

THE treatment of 27 patients with urticaria and dermatitis venenata with ACTH and cortisone was reported recently by me (2). This series has been extended to include a total of 50 and the results obtained in the entire group are recorded in this article. All the hospitalized patients were treated at this hospital and, with the exception of 3 female dependents, all were white men. Primarily, this was a study of the short-term-treatment effects of ACTH or cortisone and, but for a few exceptions, treatment was for 1 day only. Various 1-day dosage schedules were used, both to try to establish a minimal optimum dosage and to allocate the available ACTH and cortisone to as many patients as practicable. When 1 agent was unsuccessful, or if recurrences occurred, the other was tried. The results of treatment with antihistaminics, used together with calcium gluconate given intravenously, were compared with those obtained using ACTH and cortisone.

ACUTE URTICARIA

Twenty-eight patients with urticaria severe enough to warrant hospitalization were treated. All patients had received some form of therapy prior to admission, usually antihistaminics, with no abatement of lesions or symptoms. The duration of the acute urticaria prior to admission varied from 2 to 42 days. The results are summarized in table 1. Twenty of these patients were treated with ACTH and all but 2 of these improved markedly. The 2 failures received small total dosages of 20 and 40 mg., respectively. Response varied from dramatic relief in

(1) U. S. Naval Hospital, Oakland, Calif., at time of writing this article; now stationed at U. S. Naval Hospital, Corona, Calif.

(2) Ekblad, G. H.: Treatment of urticaria and dermatitis venenata with corticotropin (ACTH) and cortisone. Arch. Dermat. & Syph. 64: 628-634, Nov. 1951.

TABLE 1. *Summary of results of treatment of 28 patients with acute urticaria**

Patient	Response to			Comment
	ACTH	Cortisone	Antihistaminics with calcium gluconate**	
2, 3, 4, 5, 13	Good			H-1. 60 mg. of ACTH in 3 doses; no recurrence; good to dramatic response.
10		Good		H-1. 50 mg. of cortisone in 2 doses; no recurrence.
15, 16, 18, 20, 22	Good			H-1. 60 mg. of ACTH in 3 doses; mild recurrent transient lesions for from 2 to 14 days, requiring either no treatment or antihistaminics, p. r. n.
6, 21		Good		H-1. 200 mg. of cortisone in 4 doses; mild recurrent transient lesions for from 2 to 6 days, requiring either no treatment or antihistaminics, p. r. n.
1	Good	Good (?)		H-1. 100 mg. of cortisone in 1 dose; fair relief only. H-3. 10 mg. of ACTH in 1 dose; complete relief.
19	Good			H-1. 80 mg. of ACTH in 4 doses. H-2. Lesions clear but pruritus remained; 50 mg. of ACTH in 2 doses; good response. H-9. Recurrence; 25 mg. of ACTH intravenously with slow clearing and no recurrence.
23	Good	Good		H-1. 25 mg. of ACTH in 1 dose; good response. H-2. Recurrence; 25 mg. of ACTH in 1 dose; good response. H-3. Recurrence; 400 mg. of cortisone by mouth. H-4. Recurrence; 200 mg. of cortisone by mouth; good response and no recurrence.

TABLE 1. *Summary of results of treatment of 28 patients with acute urticaria**—Continued

Patient	Response to			Comment
	ACTH	Cortisone	Antihistaminics with calcium gluconate**	
24		Good	Good	H-1. Antihistaminics with calcium gluconate; good temporary relief. H-2. 50 mg. of cortisone in 1 dose; good temporary relief. H-3. 100 mg. of cortisone in 4 doses; good relief but no change in lesions. H-5. 50 mg. of benadryl intravenously; dramatic improvement; no recurrence.
25		Good	Good	H-1 through H-4. Antihistaminics with calcium gluconate. H-5. 100 mg. of cortisone in 1 dose and antihistaminics with calcium gluconate; excellent response; sporadic outbreak every 3 or 4 days lasting 12 hr. and requiring either no treatment or antihistaminics, p. r. n., for 2 mo.; gradually cleared.
14, 17	Good	Good	Good (?)	Good relief on 50 mg. of ACTH daily on several occasions but not on 25 mg.; recurrences. Cortisone orally; relieved while on 200 mg. daily for 3 days (2 courses); recurrences. Antihistaminics with calcium gluconate gave fair relief for 3 or 4 hr. Antihistaminics or calcium gluconate separarely gave poor relief.
11	Good	Good	Poor	H-2 and H-3. Antihistaminics and calcium gluconate. H-4. 40 mg. of ACTH in 2 doses. H-8. Recurrence; 100 mg. of cortisone in 2 doses; transient recurrence of mild pruritus requiring no treatment for 2 wk.

TABLE 1. *Summary of results of treatment of 28 patients with acute urticaria**—Continued

Patient	Response to			Comment
	ACTH	Cortisone	Antihistaminics with calcium gluconate**	
7	Good	Poor	Poor	H-1. 200 mg. of cortisone in 1 dose. H-2. 40 mg. of ACTH in 4 doses. H-9. Recurrence; 100 mg. of cortisone in 2 doses. H-15. Antihistaminics with calcium gluconate.
26	Good	Poor	Poor	H-1 through H-4. Antihistaminics with calcium gluconate; ineffective. H-5. 100 mg. of cortisone in 2 doses. H-7. 60 mg. of ACTH in 3 doses.
27		Good		Age 71; markedly pruritic urticaria after genitourinary operation and penicillin therapy; progression for 6 wk. on antihistaminics. H-1 through H-8 (first admission). 200 mg. of cortisone daily by mouth; pruritus well controlled and lesions slowly cleared; recurrence 6 wk. later following acute urinary retention, with progression to exfoliative dermatitis. H-1 through H-4 (second admission). Cortisone orally 150 mg. daily; pruritus controlled; recurrence of pruritus on discontinuing cortisone; pruritus controlled on 100 mg. daily for 1 wk., 50 mg. daily for 5 days, and 25 mg. daily for 7 days; lesions clear; no recurrence 1 mo. later.
8	Poor	Poor (?)		H-1. 50 mg. of cortisone in 1 dose. H-2. 20 mg. of ACTH in 1 dose. H-3. 100 mg. of cortisone in 4 doses.

TABLE 1. *Summary of results of treatment of 28 patients with acute urticaria**—Continued

Patient	Response to			Comment
	ACTH	Cortisone	Antihistaminics with calcium gluconate**	
9	Poor		Good	H-1. 40 mg. of ACTH in 2 doses. H-2. Antihistaminics with calcium gluconate; good relief for 3 hr. H-3. Antihistaminics with calcium gluconate and 20 mg. of ACTH; good response; recurrent minimal pruritus for 3 days.
12, 28		Poor	Good	H-1. 75 mg. of cortisone in 1 dose. H-3 through H-6. Antihistaminics with calcium gluconate; good relief for 3 hr.; no recurrence after H-6.

*The urticaria was due to penicillin sensitivity in all except: Case 12, undetermined; 13, sulfonamide reaction; 14, food; 15, paint fumes; and 23, an intravenous injection of dye.

**100 mg. of an antihistaminic was given orally every 6 hours concurrent with 1 gram of calcium gluconate given intravenously b. i. d.
H-1=first hospital day, etc.

1 patient with severe urticaria, who received a total dosage of 10 mg. of ACTH, to slower responses with gradual clearing of symptoms and lesions over periods of from 12 to 36 hours. Some patients developed transient minimal recurrences which usually were not troublesome, requiring either no treatment or occasional antihistaminic drugs with gradual permanent clearing. Six patients (7, 11, 14, 17, 19, and 23) were retreated with ACTH or cortisone with good response, although 3 of these (7, 14, and 17) continued to have troublesome relapses, usually of less severity after each treatment.

The patients with more recalcitrant conditions undoubtedly would have improved more promptly on larger initial doses, or on a more prolonged maintenance dose (case 27). Because it is usually not possible initially to forecast which patient will respond, a 1-day schedule of injections of from 10 to 20 mg. of ACTH every 3 hours for 4 doses is recommended. Patients showing more than minimal recurrences can be retreated as before for 1 day and then placed on an oral daily maintenance dose of cortisone, maintaining the dosage at a level just sufficient to control symptoms, tapering off each day until the patient's skin is clear.

Sixteen patients with acute urticaria received cortisone and the results are shown in table 1. There was good response to cortisone in 11 of these patients. The subsequent course of the cortisone-treated patients paralleled that of those treated with ACTH. In the dosages used, ACTH seemed somewhat more effective than did cortisone.

Ten patients with acute urticaria received antihistaminics with an intravenous injection of calcium gluconate. Five of these patients experienced prompt relief of symptoms; 2, fair or questionable relief; and 3, no relief. If the patient experienced relief, it lasted only from 2 to 4 hours. This treatment, however, offers the advantage of being comparatively inexpensive and readily available and is more effective than either antihistaminics or calcium gluconate used alone.

ACTH and cortisone apparently act to interrupt the allergic cycle in acute urticaria. This interruption in the majority of cases is capable of either completely stopping the process or dampening it to such an extent that it is no longer troublesome and quickly expends itself. Tuberculosis is the only contraindication to giving these drugs on a 1-day treatment schedule. The patient is extremely grateful for the relief afforded him and the number of sick days saved is appreciable.

CHRONIC URTICARIA

Six patients with chronic urticaria were treated with both ACTH and cortisone in dosage schedules similar to those used in treating acute urticaria. The results from short-term treatment were discouraging. Only 1 patient experienced relief after ACTH therapy and he relapsed 1 week after treatment. Four of these patients were also given antihistaminic drugs with an intravenous injection of calcium gluconate. The lesions of 1 patient with an urticaria of 18-month duration cleared up on a 1-week course of this therapy.

SEVERE ACUTE DERMATITIS VENENATA

Ten patients with acute dermatitis venenata (due to poison oak in all but one, case 5) were treated. In all of these the lesions were extensive, severe, and painful. The results were gratifying in 7, with the patients estimating their relief as from 50 to 75 percent. Treatment was not carried beyond 1 day. All the patients experienced some recurrence of symptoms although much of the relief was carried over so that the patients were maintained in a fairly comfortable state. Undoubtedly these patients could have been maintained more comfortably on a small maintenance dose of cortisone by mouth for 3 or 4 days. A summary of these results is given in table 2. In spite of the relief obtained in 7 of these patients, no objective improvement could be seen in the appearance of the dermatitis itself. The lesions of all 10 patients healed in what would have been their expected or usual healing time.

TABLE 2. *Summary of results of treatment of 10 patients with severe acute dermatitis venenata**

Patient	Response to		Comment
	ACTH	Cortisone	
1, 6, 7, 8,	Good		ACTH given for 1 day only, in a total dose of 40 to 80 mg. per patient; prompt relief of 50 to 75 percent of patient's discomfort; relief partially maintained on posttreatment days; no definite change in dermatitis itself.
4, 5		Good	H-1. 100 mg. of cortisone in 2 doses; results comparable to those above.
10		Good	H-1. 100 mg. of cortisone in 1 dose; good relief for 2 hr. H-2. 200 mg. of cortisone in 2 doses; good relief for 2 hr. after each injection.
2	Poor		H-1. 20 mg. of ACTH in 1 dose.
3, 9		Poor	H-1. 100 mg. of cortisone in 4 doses.

*All except case 5 (antigen undetermined) were due to poison oak.
H-1=first hospital day, etc.

MISCELLANEOUS CONDITIONS

Two patients with atopic dermatitis showed no improvement from cortisone therapy. Two patients with infectious eczematoid dermatitis were treated on the basis that the spread of eczematous lesions might have been from an allergic process. There was neither subjective nor objective improvement. Two patients with deep-seated vesicular and eczematous id reactions of the hands associated with similar lesions

of the feet and with positive fungus smears and cultures from the feet were treated. One showed no response to cortisone. The other is worthy of mention because of his subsequent interesting course following the administration of 4 injections of 20 mg. of ACTH. The marked burning and itching of the palms and soles were promptly relieved. Beginning on the second posttreatment day and continuing for 10 days, there was a marked glovelike desquamation of the skin of the hands, fingers, and feet. This desquamation was extensive and more marked than usually seen in the most severe case of erythema scarlatiniforme. The desquamation left the involved areas with a pink, nontender, healthy-looking, but very thin epidermis. The patient continued more or less symptom-free, although it took 3 months for the involved skin to lose its pink, thin-looking appearance. The patient received immediate symptomatic relief from the ACTH, but whether his period of recovery was shortened or lengthened is difficult to say.

CONCLUSION

A 1-day treatment schedule of ACTH consisting of injections of from 10 to 20 mg. every 3 hours for 4 doses, or injections of 75 mg. of cortisone every 3 hours for 4 doses, provides a very effective control of the lesions and symptoms of severe acute urticarias. The same treatment schedule provides a very effective relief of subjective symptoms in severe acute dermatitis venenata. The results in chronic urticaria were disappointing in the short-term schedules used. If ACTH or cortisone are not available, antihistaminic drugs given with intravenous injections of calcium gluconate often give good, although temporary, relief of pruritus in urticaria.

BOOK REVIEW

Arithmetic of Pharmacy, by *Charles H. Stocking,* M. S., Professor of Pharmacy and Dean of the College of Pharmacy, University of Michigan; and *Elmon L. Cataline,* Ph. D., Professor of Pharmacy and Dean of the College of Pharmacy, University of New Mexico. Based on the original text by *Alviso B. Stevens,* Ph. D., Late Professor of Pharmacy, University of Michigan. 8th edition. 148 pages. D. Van Nostrand Co., Inc., New York, N. Y., publisher, 1952.

The authors have maintained a very high level of proficiency in presenting this subject. Their book is a fine reference text for intermediate pharmacy students, and for those of us who care to keep abreast of the times. I can find no fault with this book, except for the title. "Arithmetic of Pharmacy" does not convey the idea of a professional text. "Pharmaceutical Mathematics" would appear to be a more suitable title.—*First Lt. J. A. Potts, U. S. A. F. (MSC)*

Influenza Type B

Report of 12 Cases

John A. Henderson, *Major, U. S. A. F. (MC)*
John F. Tracey, *Captain, U. S. A. F. (MC)*

AN unusual incidence of atypical respiratory infections appeared in April and May 1951 at Biggs Air Force Base, El Paso, Tex. Serologic studies for influenza were made on selected patients. These studies revealed a significant rise in influenza type B titer in 12 patients. Because of the sparsity of information in the literature on influenza type B *(1)*, we believed that this mild epidemic should be reported.

Etiology. Influenza is caused by a filtrable virus *(2-4)*. About 50 percent of the personnel assigned to Biggs Air Force Base in April and May 1951 had been in England during December 1950 and January and February 1951. As an epidemic of influenza was reported in England at that time, it may be surmised that our airmen serving in England brought both influenza type A and type B viruses back to the United States. In England the epidemic extended to our Air Force personnel, as evidenced by the increased incidence of upper respiratory infections occurring among them. The clinical diagnosis of influenza was made in many instances, but was not verified because of lack of laboratory facilities. The 12 cases reported here were clinically similar to those observed overseas and the patients were treated in the same manner.

Symptomatology, physical findings, and laboratory studies. The following symptoms were noted: Fever (12); generalized malaise (9); muscular aching (pain in back and legs) (5); headache (5); cough (5); sore throat (5); chills (3); nasal engorgement with obstruction (2); anorexia (2); nausea (2); lightheadedness (1); diarrhea (1). Subjective

(1) Rubenstein, A. D.; Ory, E. M.; Meads, M.; and Finland, M.: Outbreak of influenza B infection; epidemiologic observations. New England J. Med. 236: 862-867, June 5, 1947.

(2) Dingle, J. H.: Medical progress; influenza. New England J. Med. 237: 845-852, Dec. 4, 1947.

(3) Henle, W.: Recent advances in knowledge of epidemic influenza. M. Clin. North America 31: 1400-1417, Nov. 1947.

(4) Tanner, W. E. (chairman): Aetiology of influenza and common cold. Medical Society of London, Mar. 8, 1948, in Reports of Societies. Brit. M. J. 1: 559-561, Mar. 20, 1948.

complaints were out of proportion to the findings noted on examination. Physical findings were minimal and consisted mainly of hyperemia of the pharynx, nasal congestion, and lymphadenopathy. Roentgenograms of the chest of all patients during the acute phase were normal. Blood counts for 9 of the patients were within the normal range. One patient had a leukocyte count of 3,700 with 53 percent polymorphonuclear leukocytes, 36 percent lymphocytes, 9 percent monocytes, 2 percent basophils; and 2 patients had leukocyte counts of 13,250 and 14,600, respectively, with an elevation of the percent of polymorphonuclear leukocytes. No diagnostic significance could be attached to the results of the white blood cell and differential counts in these patients. Initial blood serum was obtained during the febrile phase of the illness for agglutination-inhibition test for influenza, types A, A^1, and B. Convalescent serum was obtained from 6 to 10 days following the initial serum. Agglutination tests, performed by the Fourth Army Area Laboratory, Brooke Army Medical Center, Fort Sam Houston, Tex., were reported as shown in table 1.

TABLE 1. *Agglutination tests for influenza B.*

Patient	First date of taking serum	Titer	Second date of taking serum	Titer	Fold rise
1	17 April	32	27 April	128	4
2	19 April	64	26 April	512	8
3	20 April	64	26 April	1024	16
4	4 May	<8	11 May	64	<16
5	7 May	128	18 May	512	4
6	8 May	64	18 May	1024	16
7	8 May	128	16 May	512	4
8	9 May	<8	21 May	16	<4
9	12 May	64	18 May	1024	16
10	13 May	512	21 May	2048	4
11	17 May	256	22 May	1024	4
12	19 May	64	22 May	512	8

Differential diagnosis. Influenza should be differentiated from nasopharyngitis, coryza, gastroenteritis, poliomyelitis, infectious mononucleosis, the prodromal stage of measles, the preicteric stage of infectious hepatitis, and atypical pneumonia (2). The most difficult differential diagnosis in our patients was between influenza and nasopharyngitis. The fact that their fever, malaise, and muscular aching was out of proportion to their physical findings favored a diagnosis of influenza. They were acutely ill with high fevers (6 had temperatures above 102° F.). It was impossible clinically to differentiate influenza

type B from types A and A^1. During the period that the 12 patients with type B influenza were observed, we observed other patients with types A and A^1 influenza verified by agglutination tests.

Clinical course and treatment. All patients were seen within the first 24 hours of their illness and were hospitalized in the station hospital. The length of hospitalization ranged from 3 to 11 days (average 5.5). Following hospitalization, all were returned to full duty, including flying assignments. No recurrences, relapses, or complications were observed.

The routine treatment consisted of bed rest, diet as tolerated, APC capsules as needed, forced fluids, and from 300,000 to 600,000 units of penicillin daily (used prophylactically). Symptomatic treatment was given for cough, nasal obstruction, sore throat, and nausea. On the above regimen, 10 of the 12 patients obtained symptomatic relief within 24 hours. The 2 patients who showed no improvement in 24 hours were given 500 mg. of aureomycin every 6 hours for 4 doses *(5)*. At the end of this period, the aureomycin was discontinued because of the patient's improvement.

(5) Finland, M.; Wells, E. B.; Collins, H. S.; and Gocke, T. M.: Aureomycin in treatment of influenza and certain other acute respiratory infections with or without pneumonia. Am. J. Med. 8: 21-30, Jan. 1950.

BOOK REVIEW

The Thoracic Surgical Patient, Preoperative, Anesthetic and Postoperative Care, by *Lew A. Hochberg,* M. D. Foreword by *Frank B. Berry,* M. D. 364 pages. Grune & Stratton, Inc., New York, N. Y., publishers, 1952. Price $8.75.

This volume deals basically and quite comprehensively with preoperative and postoperative care, surgical considerations, and complications in the management of patients with thoracic disease or injury. Technic has been intentionally de-emphasized, stress being placed on normal and pathologic physiology. The chapter on endoscopy is excellent. Anesthesiology represents the major effort and is exceptionally good with the material and methods presented representing the author's own experience and practice in this fast-growing field of thoracic surgery. An excellent bibliography is included.—*Col. J. H. Forsee, MC, U. S. A.*

Congress of Military Medicine and Pharmacy

The Fourteenth International Congress of Military Medicine and Pharmacy will convene at Montevideo, Uruguay, 1-6 March 1953. As the subjects on the agenda go beyond the specialized topics of military medicine to include the fields of medicine and surgery in general, the convention should arouse the interest of all medical men. The agenda will include:

Military medicine as a specialty.

National medical organization in wartime.

Operation of medical services in mountain warfare.

Modern concept of the initial treatment of burns and wounds.

Organization and assignment of the military pharmacy corps and training of reserve personnel.

Standardization of dental record cards.

The Secretariat of the Congress is located at: Direccion General del Servicio de Sanidad Militar. 8 de Octubre y Mariano Moreno, Montevideo, Uruguay.

Chronic Cor Pulmonale[1]

Edwin M. Goyette, *Colonel, MC, U. S. A.*

CHRONIC cor pulmonale is characterized by right ventricular hypertrophy with or without congestive failure, secondary to a disease in the lungs or pulmonary vessels.

INCIDENCE

This disease is not frequently encountered in the military service. Patients with chronic chest disease are usually retired long before they develop cor pulmonale, but in a chest center such as this, typical cases are encountered frequently. The autopsy incidence in civilian practice is from 1.8 to 6 percent of the deaths due to heart disease (2). The clinical incidence is much less because the signs and symptoms are overshadowed by the pulmonary disease which also enforces marked limitation of activity, thereby preventing the heart disease from becoming manifest.

ETIOLOGY

The causes of cor pulmonale are varied but any pulmonary disease which produces prolonged, increased resistance to blood flow in the pulmonary vessels produces chronic pulmonary hypertension and may result in chronic cor pulmonale. The primary disease may be in the lung parenchyma or in the pulmonary vessels. Emphysema is the classic and most common cause. One-fourth to three-fourths of the patients with emphysema show hypertrophy of the right ventricle. Only the hypertrophic or obstructive type of emphysema results in cor pulmonale. In this disease the bronchioles are obstructed by exudate, bronchiolar spasm, or changes in the bronchiolar walls. This produces a decrease in the total cross-sectional area of the capillary bed, resulting in pulmonary hypertension and cor pulmonale.

Asthma produces cor pulmonale only indirectly by producing emphysema (3). Chronic pulmonary infections which produce extensive pulmonary fibrosis may produce pulmonary hypertension. Tuberculosis is

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(1) Presented as part of the lecture series on tuberculosis and chronic pulmonary disease given at Fitzsimons Army Hospital, Denver, Colo., 24 to 28 September 1951.

(2) Friedberg, C. K.: Diseases of the Heart. W. B. Saunders Co., Philadelphia, Pa., 1949.

(3) White, P. D.: Heart Disease. 3d edition. The Macmillan Co., New York, N. Y., 1947.

not a frequent cause of chronic cor pulmonale. This is particularly true today, when the disease is diagnosed early and treated promptly with antibiotics and by operation. Chronic tuberculosis may produce extensive fibrosis which increases the resistance in the pulmonary vessels, resulting in chronic pulmonary hypertension. Chronic bronchiectasis only occasionally results in cor pulmonale.

Sarcoidosis may produce extensive pulmonary fibrosis, thereby resulting in cor pulmonale. The pneumoconioses are frequent causes of cor pulmonale. Fortunately the incidence of advanced pneumoconiosis is decreasing, thanks to advances in preventive and industrial medicine. Granulomatoses such as produced by beryllium, sarcoidosis, and other causes may result in pulmonary hypertension and cor pulmonale.

Chest deformities may on occasions result in cor pulmonale which develops in about 75 percent of the patients with a certain type of kyphoscoliosis. This occurs in patients with scoliosis in the lower cervical and thoracic regions with the convexity to the right. The deformity appears in childhood before growth is completed and has a deleterious mechanical effect as well as increasing pulmonary resistance *(4)*. Funnel chest does not produce cor pulmonale but patients with this deformity often have a physiologic murmur which is erroneously interpreted as evidence of heart disease *(2)*.

Repeated small pulmonary thrombi and emboli are the most frequent disorders of the pulmonary vessels which results in cor pulmonale. Primary pulmonary hypertension, a disease of unknown cause, results in right ventricular hypertrophy and secondary changes in the pulmonary vascular tree. These culminate in cor pulmonale and death is from congestive heart failure. Pulmonary arteriosclerosis and arteriolar sclerosis are rare and usually are the result of pulmonary hypertension rather than the cause. Other causes of pulmonary obstructions such as carcinomatous lymphangitis and emboli, schistosomiasis, and sickle cell anemia, may on rare occasions result in chronic cor pulmonale. Anoxia, acute or chronic, is an important factor in elevating the pulmonary blood pressure. Chronic anoxia such as is encountered in chronic pulmonary disease, particularly emphysema, produces pulmonary hypertension. Acute bouts of anoxia markedly aggravate the hypertension and may be the trigger mechanism in precipitating failure.

PATHOLOGY

The fundamental pathologic changes of chronic cor pulmonale are found in the lungs, in the pulmonary vascular tree, and in the heart. Those found in the heart are uniform and independent of the primary cause; those in the vascular tree are sometimes influenced by the etiologic process; and those in the lung almost always depend on the

(4) Chapman, E. M.; Dill, D. B.; and Graybiel, A.: Decrease in functional capacity of lungs and heart resulting from deformities of chest; pulmonocardiac failure. Medicine 18: 167-202, May 1939.

primary pathologic process. The changes encountered in the lung fall into 3 broad patterns: that seen in emphysema, the characteristic findings of pulmonary fibrosis or granulomatosis, and that seen in primary disease of the blood vessels.

In obstructive emphysema the lungs are large, appear distended in full inspiration, and do not collapse when the thoracic cage is opened. The alveolar spaces appear large and confluent. The septums are atrophic, ruptured, incomplete, or missing. In spite of the large size, the surface area of the alveolar septums where hemorespiratory exchange occurs is greatly diminished. In the diseases characterized by extensive pulmonary fibrosis or granulomatosis, the essential changes are those of the primary disease plus the extensive fibrous tissue reaction produced by the chronic infection or irritation. Examples of these are tuberculosis, pnuemoconiosis, bronchiectasis, atelectasis, sarcoidosis, berylliosis, and chest deformities with atelectasis. The lungs are usually normal in those processes which originate in the vascular tree.

The pathologic changes in the vascular tree are found predominantly in the smaller arterioles and in the pulmonary capillaries. In emphysema the changes in the alveolar septums result in narrowing, fibrosis, thrombosis, or complete obliteration of the capillaries. The result is a marked reduction in the total cross-sectional area of the available capillary circulation. The fibrotic and granulomatous processes similary affect the capillary bed. The increased resistance to flow through the capillaries produces pulmonary hypertension which in turn affects the arterioles and smaller arteries. The changes produced consist of atherosclerosis with narrowing, or even obliteration of the arterioles. This aggravates the existing hypertension and tends to accelerate further extension of the process. These are the pathologic changes seen in primary pulmonary hypertension and are secondary to the hypertension, not the cause of it. The smaller pulmonary arteries and arterioles may be occluded by repeated small pulmonary emboli, schistosomiasis, sickle cell anemia, and carcinoma. Chest deformities may exert a direct effect on the vessels by torsion or compression.

Pulmonary arteriosclerosis of the primary pulmonary vessels does not result in pulmonary hypertension because these vessels are often dilated and there is no interference with the pulmonary circulation.

The changes found in the heart consist of hypertrophy and dilatation of the right-sided chambers. The pulmonary hypertension results in hypertrophy of the right ventricle and this usually begins in the outflow tract or crista supraventricularis. Hypertrophy is present if the right ventricle exceeds 5 mm. in thickness. Some dilatation of the right ventricle follows hypertrophy and with failure, the dilatation becomes marked. When this is sufficient to produce a relative tricuspid insufficiency, the rising pressure is transmitted back to the right auricle

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so dilatation and hypertrophy of that chamber ensues. In sarcoidosis the myocardium may be involved by the granulomatous process so that both ventricles may fail as a result of the myocardial involvement. The left ventricle is often slightly hypertrophied also. The exact mechanism is unknown but the hypertrophy is usually attributed to anoxemia, coronary artery disease, or a preceding hypertension.

PHYSIOLOGY

Cournand (5) and Harvey et al. (6) have clearly outlined the normal and pathologic physiology in chronic cor pulmonale. In the normal pulmonary physiology (1) an equal amount of blood flows through the lungs and through the systemic circulation; (2) the pulmonary vascular bed is a low pressure system, the mean normal pressure in the pulmonary artery being 13 mm. Hg., the mean pressure in the pulmonary capillaries being about 9 mm., and the left atrial pressure being about 7 mm., making the total drop of pressure from the pulmonary artery to the left atrium less than 10 mm. or less than one-tenth of the pressure drop from the aorta to the right auricle; and (3) blood distribution through individual parts of the lung depends on local conditions rather than on control by the nervous system, hence a localized area of low oxygen tension in the lungs produces a shunting away of blood to better ventilated alveoli through a local mechanism controlling the arteriolar flow.

The pathologic physiology of the circulatory changes in chronic pulmonary disease can be related to the anatomic changes in the pulmonary vascular bed and to anoxia. The first change is a reduction in the number, caliber, and expansibility of the smaller vascular channels. This reduction is absolute as well as relative. The rigidly distended lungs and bronchiolar obstruction result in impaired pulmonary ventilation with resultant faulty aeration of blood due to decreased oxygen tension and poor transfer across the alveolar membrane. In diseases characterized by greatly thickened alveolar septums and pulmonary vessels the alveolar-capillary diffusion of oxygen is impaired (7). Anoxia acts directly on the vessels to produce vasoconstriction with further reduction in their capacity. It increases the cardiac output by increasing the speed of the circulation, thereby increasing the venous return. It produces a compensatory polycythemia with increased viscosity and this results in hypervolemia. It also has a direct deleterious effect on the myocardial fibers and appears to be an important factor in producing pulmonary hypertension in emphysema. Although the Bellevue Hospital group believe that anoxia is the more important factor in emphysema, they also believe that the

(5) Cournand, A.: Some aspects of pulmonary circulation in normal man and in chronic cardiopulmonary diseases. Circulation 2: 641, 1950.

(6) Harvey, R. M.; Ferrer, M. I.; Richards, D. W., Jr.; and Cournand, A.: Influence of chronic pulmonary disease on heart and circulation. Am. J. Med. 10: 719-738, June 1951.

(7) Austrian, R.; McClement, J. H.; Renzetti, A. D., Jr.; Donald, K. W.; Riley, R. L.; and Cournand, A.: Impairment of alveolar capillary diffusion. Am. J. Med. 11: 667, 1951.

anatomic changes are dominant in diseases characterized by extensive fibrosis and granulomatosis, such as silicosis, certain types of tuberculosis, berylliosis, and sarcoidosis. Anoxia is present only during exercise until late in these diseases. Patients with these diseases have heart failure with a low output failure which is often irreversible except for that part caused by anoxia. The pulmonary hypertension results in a chronic strain on the right ventricle which is manifested by compensatory right ventricular hypertrophy and dilatation.

All of these factors are compensatory and serve to maintain homeostasis. We do not know in all instances what factor precipitates the failure, but often an acute bout of anoxia is the trigger mechanism. This may be produced by an attack of bronchiolar obstruction or a pulmonary infection. Under the combined assault of: (1) high cardiac output, (2) marked pulmonary hypertension, (3) direct action of anoxia on the strained right ventricular myocardium, and (4) increased blood volume, the optimal stretch of the myocardial fibers is exceeded and right ventricular failure follows. If proper therapy to correct the anoxia is instituted, the failure is easily reversible. This fact indicates that anoxia is the more important factor because it can be corrected while nothing can be done to alter the anatomic or structural changes.

CLINICAL FEATURES

Friedberg *(2)* has divided the clinical aspects of chronic cor pulmonale into the stage of (1) uncomplicated pulmonary disease, (2) compensated cor pulmonale characterized by the addition of the signs and symptoms of pulmonary hypertension and right ventricular hypertrophy, and (3) decompensated cor pulmonale characterized by the addition of evidences of right-sided heart failure. Pulmonary failure may occur during any stage but congestive heart failure occurs only in the third or terminal stage.

The stage of uncomplicated pulmonary disease usually lasts for several years. The signs and symptoms are those of the pulmonary disease (dyspnea, cough, and cyanosis). The dyspnea is frequently the outstanding symptom, particularly in emphysema. Initially, it occurs only on exertion but progresses so that it is present even at rest. It is probably due to some abnormal reflex stimulus to the respiratory center. Orthopnea is conspicuously absent. Cough is usually present and may be productive of various types and amounts of sputum. The cyanosis is usually slight at first but increases as the pulmonary function decreases and the arterial anoxemia increases. With pulmonary failure, the cyanosis becomes intense. The neck veins may be prominent but the venous pressure is only slightly elevated. The venous distention is explained by the interference with normal venous emptying into the right auricle due to the loss of the normal pressure relationships found in the inadequate ventilatory movements of the thorax. There may even be slight dependent edema on the same basis *(8)*. The

(8) Darley, W., and Kauvar, S. S.: Emphysema and chronic bronchitis in aged. Clinics 4: 1143-1156, Feb. 1946.

clinical appearance of the patient with emphysema is characterized by (1) the chin held forward; (2) a short, thick neck with hypertrophied sternocleidomastoid muscles; (3) a barrel chest with limited expansion; (4) costal type of breathing; (5) a low, fixed diaphragm; and (6) a hyperresonant chest. Other types of chronic pulmonary disease exhibit the signs and symptoms of the basic pathologic changes present.

In the compensated stage, the pulmonary disease is usually more advanced with intensification of the signs and symptoms; the dyspnea is more marked; cyanosis is increased; and clubbing may be present. This stage is characterized by the addition of the following signs and symptoms of pulmonary hypertension and right ventricular hypertrophy: (1) an accentuated second sound in the pulmonary area; (2) prominent pulsation in the epigastrium produced by a vigorous, hypertrophied right ventricle; (3) roentgenographic evidence of an enlarged pulmonary artery and right ventricle; (4) electrocardiographic evidence of right ventricular hypertrophy or dilatation; and (5) polycythemia as a response to the chronic anoxia. This stage may also last many years.

The decompensated stage is characterized by the addition of the following evidences of right-side congestive failure: (1) definite venous distention with definitely elevated venous pressure; (2) the development of peripheral dependent edema and occasionally ascites; (3) enlarged and usually tender liver; (4) rarely auricular fibrillation; and (5) the signs and symptoms of increasing pulmonary failure such as an increase in the dyspnea, cyanosis, polycythemia, syncope, vertigo, and somnolence due to cerebral anoxemia. This stage is relatively short and progresses unfavorably.

CIRCULATORY MEASUREMENTS

Clinical measurements of the circulatory dynamics are useful guides in evaluating the cardiac status of any patient with cor pulmonale. The venous pressure and circulation time can be easily determined in most installations but intracardiac pressures, blood volume, and oxygen saturation studies are usually available only in larger installations. They may, however, be invaluable in following the evolution of cor pulmonale. The venous pressure may be slightly elevated while the disease is compensated, but a distinct rise occurs with right ventricular failure. The circulation time is normal in uncomplicated pulmonary disease but is usually decreased in compensated cor pulmonale and becomes prolonged when congestive failure sets in. The blood volume is increased when polycythemia develops, but the plasma volume also becomes increased with the onset of congestive heart failure. The pulmonary arterial and right ventricular systolic pressures become elevated with the development of compensated cor pulmonale. Elevation of right ventricular diastolic and right atrial pressures are the hallmarks of cardiac failure (5, 6, 9).

(9) McMichael, J.: Circulatory failure studied by means of venous catheterization. In Dock, W., Snapper, I., and others (editors): Advances in Internal Medicine, Vol. II. Interscience Publishers, Inc., New York, N. Y., 1947.

ROENTGENOGRAPHIC FINDINGS

These findings depend on the stage to which the disease has progressed. During the first stage the roentgenogram shows only the changes of the underlying pulmonary disease. The cardiovascular silhouette remains normal. With the development of cor pulmonale the hilar shadows become exaggerated because of dilatation of the right and left pulmonary arteries. There is a straightening of the left cardiac border due to the enlargement of the main stem of the pulmonary artery. Definite evidence of an enlarged right ventricle may not be demonstrable. The posteroanterior view may be misleading because of the apparent increase in the size of the lungs and the low position of the diaphragm. The cardiothoracic ratio is unreliable. The size of the right ventricle is best determined in oblique and lateral views which may demonstrate an abnormal fullness in the retrosternal space if this ventricle is hypertrophied. The decompensated stage may be demonstrated radiographically by further exaggeration of the hilar and vascular shadows, by the superior vena cava becoming prominent and wide, and by evidence of right atrial enlargement. Definite evidence of cardiomegaly usually occurs because the heart is dilated as well as hypertrophied. Most of the enlargement is apparent in the right auricle and especially in the right ventricle.

ELECTROCARDIOGRAM

This is a distinct help in the diagnosis of cor pulmonale because evidence of right ventricular hypertrophy may be detected sooner by this means than by x-ray. Johnson et al. *(10)* have shown that a great deal of pulmonary hypertension must be present before it is reflected by the ECG. In addition, the ECG is a more accurate index as to which ventricle is enlarged. Only multiple precordial leads can be depended on to show evidence of right ventricular hypertrophy. The extremity leads are notoriously inaccurate and unreliable. Any of the following patterns may be seen: (1) normal, (2) right bundle-branch block, and (3) the pattern described by Myers et al. *(11)* as characteristic of right ventricular hypertrophy or dilatation. In brief, this consists of either a QR or RSR' complex with a prominent R or R', an inconspicuous or absent S wave, and a delayed intrinsicoid deflection in right precordial leads.

DIAGNOSIS

The diagnosis is usually easily made and is based on evidence of underlying disease of the lungs or pulmonary vessels, the demonstration of right ventricular hypertrophy, and the exclusion of other causes of right

(10) Johnson, J. B.; Ferrer, M. I.; West, J. R.; and Cournand, A.: Relation between electrocardiographic evidence of right ventricular hypertrophy and pulmonary arterial pressure in patients with chronic pulmonary disease. Circulation 1: 536-550, Apr. (pt. 1) 1950.

(11) Myers, G. B.; Klein, H. A.; and Stofer, B. E.: Electrocardiographic diagnosis of right ventricular hypertrophy. Am. Heart J. 35: 1-40, Jan. 1948.

ventricular hypertrophy such as mitral stenosis. The main problem is to differentiate uncomplicated pulmonary disease from compensated cor pulmonale. The symptoms are primarily those of the underlying pulmonary disease. Dyspnea, cyanosis, slight pedal edema, and slight elevation of venous pressure may be due to the pulmonary disease alone. The downward displacement of the liver by the diaphragm may simulate hepatic enlargement. Extreme intensification of dyspnea and cyanosis are usually due to pulmonary failure rather than to cardiac failure. The diagnosis of decompensated cor pulmonale rests on the evidence of cor pulmonale plus the evidence of right-sided failure. This should consist of the finding of peripheral edema; an enlarged, tender liver; definite elevation of venous pressure; and prolongation of the circulation time.

COURSE AND PROGNOSIS

The important role of anoxia in producing polycythemia and hypervolemia in the development of chronic cor pulmonale in patients with emphysema permits us to follow their course and prognosticate their future. Invariably the danger signals in their clinical course are increasing anoxia and hypervolemia. Patients with an arterial oxygen saturation above 90 percent which does not drop with exercise have a mild emphysema and no alteration of circulatory dynamics. Those with marked unsaturation (below 90 percent) or those who show a marked drop on standard exercise have a severe emphysema and are in a precarious circulatory status *(5)*. Hypervolemia is indicated by a rising hematocrit. The increased blood volume at first is due to an increase in the number of cells which are hypochromic so the hemoglobin determination is not an accurate index as it may be normal or even low. The hematocrit is a much more dependable index. Treatment directed at relieving anoxia at this stage prevents progression of the pulmonary disease to cor pulmonale and the eventual development of heart failure. Once this occurs, the prognosis is unfavorable and death usually results within 2 years (often within 6 months).

TREATMENT

In the first stage the treatment of cor pulmonale is prophylactic. The prompt recognition and vigorous treatment of the pulmonary disease found will do much to prevent the destruction of pulmonary tissue and lessen the production of pulmonary fibrosis. Only in this way can the incidence of the disease be reduced.

The main effort in the second stage should be directed at combating the pulmonary infection. This should consist of the liberal use of antibiotics parenterally and by inhalation. Probably the combination of penicillin and streptomycin is the most efficacious. Every effort must be made to relieve bronchiolar spasm by the liberal use of atomized bronchodilators given with the antibiotics by inhalation. This should be supplemented by the use of other bronchodilators given orally or parenterally, but these are usually less effective than those applied

directly to the bronchial tree. The removal of bronchial secretions should be facilitated by the use of expectorants and postural drainage. Inhalation of oxygen must be used sparingly and should be given intermittently rather than continuously. The stimuli for respiration are carbon dioxide retention which stimulates the medullary center and oxygen depletion which has a similar effect through the carotid and aortic body. The administration of oxygen raises the arterial oxygen saturation thereby diminishing that stimulus and producing hypoventilation. The use of morphine must be avoided as these patients are extremely sensitive to its respiratory depressant effects.

Patients in the decompensated stage should be treated for congestive failure plus the treatment outlined above for the pulmonary infection. Treatment of the underlying pulmonary infection must not be neglected as most of the symptoms are due to pulmonary failure. In addition, infections tend to aggravate the cardiac disability. Treatment of the congestive failure should include low sodium diet (limited to 700 mg.), mercurial diuretics as needed, and digitalis in full therapeutic doses to improve myocardial function. Digitalis has long been in ill repute in this condition because it is often used in patients with pulmonary failure instead of cardiac failure, but when cardiac failure is also present, digitalis is of definite value and should be used *(12, 13)*. Venesection is controversial. High venous pressure, increased cardiac output, and polycythemia are compensatory mechanisms. When these are due to pulmonary failure, venesection is contraindicated. In the presence of a large congested liver, peripheral edema, high plasma volume, venesection may be beneficial but probably should be followed by reinfusion of packed erythrocytes. Anticoagulants should be used to prevent pulmonary infarction.

The role and treatment of pulmonary infections has been stressed because most patients with these infections have pulmonary failure rather than cardiac failure and our therapeutic efforts may be directed against the wrong system. Many of the symptoms are pulmonary in origin even when cardiac failure is present and appropriate therapy for the pulmonary condition is needed. Control of pulmonary infections lessens production of fibrosis, thereby decreasing the likelihood of developing chronic cor pulmonale. The best treatment is prophylactic.

(12) Harvey, R. M.; Ferrer, M. I.; Cathcart, R.; and Cournand, A.: Some effects of digoxin upon heart and circulation in man; digoxin in left ventricular failure. Am. J. Med. 7: 439-453, Oct. 1949.

(13) Ferrer, M. I.; Harvey, R. M.; Cathcart, R. T.; Webster, C. A.; Dickinson, W. R., Jr.; and Cournand, A.: Some effects of digoxin upon heart and circulation in man; digoxin in chronic cor pulmonale. Circulation 1: 161-186, Feb. 1950.

ARTICLES BY PERSONNEL OF THE MEDICAL SERVICES OF THE ARMED FORCES PUBLISHED IN OTHER JOURNALS

Bierman, H. R.; Perkins, E. K., Capt., U. S. A. F. (MC); and Ortega, P.: Pericarditis in patients with leukemia. Am. Heart J. 43: 413-422, Mar. 1952.

Crowe, W. W., Capt., DC, U. S. N.: Treatment of depressed fracture of zygomatic bone. J. Oral Surg. 10: Jan. 1952.

Douglas, B. L., Lt. (jg), DC, U. S. N. R.: Dental side-effects of tuberculosis. New York State Dent. J. 18: 140, Mar. 1952.

Fanning, R. J., Maj., DC, U. S. A.: What Do We Know About Process of Tooth Decay? Dent. Items Int. Mar. 1952.

Fanning, R. J., Maj., DC, U. S. A.: Dental survey of United States Army inductees in Hawaii. Hawaii M. J. 11: 214-215, Mar.-Apr. 1952.

King, S. E., and Gronbeck, C., Jr., Lt. Col., MC, U. S. A.: Benign and pathologic albuminuria; study of 600 hospitalized cases. Ann. Int. Med. 36: 765-785, Mar. 1952.

Leffler, R. J., Lt., MC, U. S. N.: The spleen in hypersplenism. Am. J. Path. 28: 303-314, Mar.-Apr. 1952.

Psaki, R. C., Lt. Col., MC, U. S. A., and Kuitert, J. H., Lt. Col., MC, U. S. A.: Diagnosis of injury to roots and branches of lumbar plexus with report of case. Arch. Phys. Med. 33: 10-14, Jan. 1952.

Psaki, R. C., Lt. Col., MC, U. S. A., and Schields, C. D., Lt. Col., MC, U. S. A.: Ischemic necrosis of anterior tibial muscle; report of case. Arch. Phys. Med. 33: 153-155, Mar. 1952.

Russum, B. C., and Reals, W. J., Capt., U. S. A. F. (MC): Dissecting aneurysm of aorta; clinical pathologic observation in 12 cases. Nebraska M. J. 37: 46, Feb. 1952.

Tullis, J. L., Commander, MC, U. S. N.; Chambers, F. W., Jr., Commander, MSC, U. S. N.; Morgan, J. E., Commander, MSC, U. S. N.; and Zeller, J. H.: Mortality in swine and dose distribution studies in phantoms exposed to super-voltage x-radiation. Am. J. Roentgenol. 67: 620, Apr. 1952.

Cardiovascular Problems of Ambulatory Servicemen[1]

William H. Wehrmacher, *Lieutenant, MC, U. S. N. R.* [2]

EXPEDIENT handling of large numbers of servicemen's complaints within the sick-call period necessitates a rapid evaluation of symptoms and signs so that those requiring only supportive treatment can be returned to duty quickly and so that the more seriously ill may be further studied. This report of the diagnostic findings in 163 ambulatory servicemen referred to the cardiovascular clinic of a naval hospital demonstrates the more common causes for the cardiovascular complaints observed. This group of selected persons differed somewhat from those encountered in a civilian clinic. Preliminary examinations by local boards and Army Induction Centers eliminated about 45 percent of the registrants from general military duty because of lack of physical or mental qualifications during World War II. Ten percent of these were eliminated for cardiovascular disease [3]. This study analyzes a portion who escaped elimination after preliminary screening examinations.

METHOD

Servicemen, ranging in age between 18 and 45 years (average 23.6) were referred from the surrounding dispensaries and infirmaries for cardiovascular evaluation between 15 September 1950 and 1 September 1951. Most of them were referred for symptoms which might be attributed to heart disease; some because of a history of rheumatic fever or an abnormal finding noted on a routine physical examination; and a few patients because of parental or congressional inquiry regarding the health of the patient. All the patients had been accepted as physically sound after a recent physical examination and most of them had been recently recalled to active duty.

The examination routinely included careful interrogation into the nature and duration of symptoms, a review of the past and family history often supplemented by written statements from the family physician, a

(1) From the U. S. Naval Hospital, Oceanside, Calif.
(2) Now at the Marshall Field Clinic, Chicago, Ill.
(3) Rowntree, L. G.; McGill, K. H.; and Folk, O. H.: Health of Selective Service registrants. J. A. M. A. 118: 1223-1227, Apr. 4, 1942.

physical examination, an ECG, and a radiographic examination of the chest in the posteroanterior and left lateral projections. When indicated, fluoroscopic examination of the chest with additional films, radiographic examinations of the spine, the Master two-step test, the histamine test of Roth and Kvale, the cold-pressor test, the benzodioxane test, ballistocardiograms, and angiocardiographic studies were made.

Each patient in the series was examined by me. Repeated examinations and examinations by other members of the medical service of those patients in whom there was any question of the origin of a cardiac murmur were made. The patients complained of a wide variety of symptoms, but most common were dyspnea, palpitation, cough, chest pain, nervousness, or a history of a prior diagnosis of "heart trouble." Table 1 shows the percent of patients in the major diagnostic categories complaining of these symptoms.

TABLE 1. *The symptoms observed in 163 servicemen examined on cardiology service**

Final diagnosis	History of "heart trouble"	Dyspnea	Palpitation	Cough	Chest pain	"Nervousness"
Psychogenic cardiovascular reaction	56	29	26		66	59
"Labile" hypertension	11				11	45
Essential vascular hypertension	86	14			14	28
Rheumatic fever (history only)	100	17			17	
Functional cardiac murmurs	9	9			54	9
No disease		35	8	8	46	

* Figures refer to percent, not number of patients.

RESULTS

Table 2 shows the final diagnoses established and their frequency. Psychogenic disorders, including labile cardiovascular responses to emotional stimuli, constituted the largest group. For the most part, the primarily psychogenic symptoms and findings were "hyperdynamic reactions" which Wolf and Wolff *(4)* found more commonly associated with rage, fear, anger, resentment, and anxiety. Less common were the "hypodynamic reactions" which these same authors found associated with a "failure to strike back" against an assault and associated with feel-

(4) Wolf, G. A., Jr., and Wolff, H. G.: Studies on nature of certain symptoms associated with cardiovascular disorders. Psychosom. Med. 8: 293-319, Sept.-Oct. 1946.

ings of hopelessness and defeat. The patient's psychogenic symptoms were of long duration, antedating their first military service in virtually all the cases. In many, the symptoms were aggravated by the time they

TABLE 2. *Diagnostic summary of 163 servicemen examined on cardiology service**

Diagnosis	Number of patients		Percent of total	
Primary psychogenic reaction	54		33.1	
Psychogenic cardiovascular reaction		40		24.5
"Labile" hypertension		14		8.6
Rheumatic fever	22		13.5	
Rheumatic heart disease				
(a) Aortic valve alone		3		1.8
(b) Mitral valve alone		4		2.5
(c) Mitral and aortic valves		3		1.8
(d) First degree A. V. heart block		2		1.2
Verified history of rheumatic fever		10		6.1
No disease	17		10.4	
"Physiologic" murmurs	16		9.8	
Essential vascular hypertension	12		7.4	
Congenital heart disease	10		6.1	
Interventricular septum defect		3		1.8
Interauricular septum defect		2		1.2
Patent ductus arteriosus		2		1.2
Idiopathic dilatation of the pulmonary artery		3		1.8
Conduction disturbance without evident heart disease	10		6.1	
Right bundle-branch block		3		1.8
Wolff-Parkinson-White syndrome		1		0.6
Paroxysmal auricular tachycardia		2		1.2
Sinus tachycardia		1		0.6
Nodal and ventricular premature systoles		1		0.6
Sinus arrhythmia with tachycardia and frequent sinus arrest		1		0.6
Complete A. V. heart block		1		0.6
Miscellaneous	10		6.1	
Obesity		4		2.5
Carotid sinus syncope		2		1.2
Epilepsy (grand mal)		1		0.6
General congenital underdevelopment		1		0.6
Pulmonary emphysema		1		0.6
Bronchitis, acute		1		0.6
Pain in the thoracic wall	8		4.9	
Diagnosis could not be established	3		1.8	
Arteriosclerotic heart disease	1		0.6	

*If more than 1 diagnosis was applicable, the case is listed under the major diagnosis, not both.

reported for care and could usually be correlated with the displacement from the home environment, resentment or disappointment with duty assignment, or anticipation of contacting hostile forces.

Although individual clinical syndromes varied greatly, most histories contained large fragments of a composite story. The patient had often been told that he had heart trouble, a nervous heart, or a murmur. Usually his personal physician had not elected to refer him to a cardiologist, but the patient had often "shopped around" for opinions of several physicians. Unfortunately, he carried unwarranted forebodings of anticipated disaster, indicated by the parallels which he drew between his own symptoms and those of a friend or neighbor who had suddenly died of a "heart attack." Not only did he seek multiple opinions, but also he would accept a serious innuendo more readily than reassurance. He limited his physical activity. He was usually acutely aware of his cardiac action, hearing it, feeling the precordial thrust, mindful of its acceleration and deceleration, and occasionally noting premature contractions and compensatory pauses with alarm. He manifested poor exercise tolerance and easy fatigue. He had difficulty getting enough breath, or deep enough breaths, and often had as much difficulty breathing when sitting or lying as when engaging in active sports. Thoracic pain was often present as a momentary sticking, stabbing distress in the region of the apical impulse, or a vague, constant distress throughout the chest. It was not similar to angina pectoris, which has been described as a heavy, uncomfortable, anterior thoracic distress rarely lasting less than 30 seconds or more than 30 minutes (5). The pain was rarely reproducible with a definite amount of exertion. It could often be correlated with emotion. Fifty-nine percent of the patients recognized their own anxiety symptoms and described themselves as "high-strung," frequently tremulous, easily startled, often provoked to unjustified rage, and the like. Many were nail-biters, bed-wetters, or victims of other nervous habits. One-fourth of the patients had systolic murmurs which were not considered to be organic. All manifested labile cardiovascular responses, excessive sweating which usually left the hands and feet clammy, and digital tremors.

The patients with labile hypertension were generally similar to those with other psychogenic cardiovascular reactions, except that they exhibited less anxiety. These patients showed transient elevations of the systolic pressure above 150 and of the diastolic pressure above 90. The pressure would return to within normal limits after a period of rest and reassurance. A subsequent transient elevation could usually be provoked by emotionally disturbing stimuli or by the cold-pressor test. It was particularly useful to have a record of the blood pressure determinations over a period of several days to evaluate how often the pressure was elevated and how long the elevation was sustained. A histamine test, after the technic of Roth and Kvale, was performed on each of

(5) Harrison, T. R.: Clinical aspects of pain in chest; angina pectoris. Am. J. M. Sc. 207: 561-587, May 1944.

these patients and was normal except in 1 patient with marked anxiety provoked by giving the test. When the test was repeated subsequently, it was normal, as were the tetraethylammonium chloride, mecholyl, benzodioxane, and adrenal area massage tests. In all these patients the peripheral arteries, including the vessels of the fundus oculi, were normal. There were no signs of renal disease, coarctation of the aorta, and none of the flush response of the "diencephalic syndrome." Although the ultimate incidence of sustained hypertension and of cardiovascular renal diseases is somewhat higher in patients with labile (transient) hypertension *(6)*, no evidence of sustained hypertension or of cardiovascular renal disease was evident in this group. Even in the prolonged study of Levy et al. *(6)* the ultimate development of sustained hypertension was by no means uniform. The results of superficial psychotherapy in the prevention of sustained hypertension in this group will require a longer period of study for evaluation.

Sustained essential vascular hypertension, often associated with early vascular changes in the eye grounds, was found in 12 patients. None were of the malignant type. No cases of coarctation of the aorta, pheochromocytoma, chronic nephritis, or organic intracranial disease productive of hypertension were encountered.

In only 1 patient was arteriosclerotic heart disease, manifested by the anginal syndrome, present. This man was being considered for recall to active duty and was rejected. Although arteriosclerotic heart disease manifested by the anginal syndrome or myocardial infarction occurs occasionally in military personnel, it is rare and should not be given the pre-eminent diagnostic position when seeking the cause of chest pain in this group.

The history of previous rheumatic fever could be verified in 22 patients; in 10 no residual lesion was demonstrable; in 10 there was a residual valvular lesion; and in 2 there was a first degree A. V. block. In both patients with heart block, there was sufficient muffling of the first heart sound to indicate taking an ECG. In none of these outpatients were signs of decompensation present. Most of the symptoms were of nervous origin, related more to the patient's knowledge that (1) he had previously had rheumatic fever and (2) this disorder is usually associated with cardiac involvement than to the presence of the residual lesion.

Only 10 patients with congenital heart disease were encountered. None had cyanosis. I should have liked to have carried out catheterization studies, particularly in those with "idiopathic dilatation of the pulmonary artery" and in those with septal defects, to verify and complete the diagnostic picture. None of these patients was particularly incapacitated by his anomaly at the time of examination.

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(6) Levy, R. L.; Hillman, C. C.; Stroud, W. D.; and White, P. D.: Transient hypertension; its significance in terms of later development of sustained hypertension and cardiovascular-renal diseases. J. A. M. A. 126: 829-833, Nov. 25, 1944.

A variety of arrhythmias and conduction disturbances were noted in 10 patients with no other evidences of cardiac disease and no apparent psychogenic disorders. Among those with psychogenic disorders, there were many who manifested premature ventricular systoles and others with a wandering pacemaker; but in none was I so successful as Walker (7) in directly modifying the rhythm by psychotherapeutic methods.

Pain in the thoracic wall, unassociated with any disease of the heart, was noted in 8 patients. In 5 the pain was associated with a funnel breast; and in 3 the pain was positional and related to the application of stress to the left lower thorax, attributed to a fibromyositis of the thoracic wall. Most of the patients with funnel breasts were self-conscious about it, making it difficult to evaluate the relative role of the deformity and the patient's concern about it in the genesis of the pain. In none of these patients was it possible to establish spondylitis, displaced costal cartilages, sympathetic reflex dystrophies, or the herpes zoster type of intercostal neuritis as causes for the pain. Although several patients with the scalenus anticus syndrome, some due to cervical rib, were seen; none had suggested cardiac disease to the referring physician. In none could disease of the esophagus or stomach be implicated as the cause of the pain suggesting cardiac disease to the referring physician. The youth of the subjects was probably responsible for the infrequency of painful stomach and esophageal disorders such as were encountered in Harrison's analysis of thoracic pain (5,8-10).

In 33 patients no organic disease was demonstrable. They responded immediately to reassurance and manifested no significant neurotic stigmata; 16 of them had functional systolic murmurs and the remainder had little or no change in the heart sounds and no other physical or roentgenographic findings of note.

For 3 patients, no definite diagnosis could be established because they were lost from this study before their examinations could be completed.

DISCUSSION

The diagnosis of most cardiovascular problems of servicemen can be established from a careful review of the history, physical findings, and a radiographic examination of the chest. These examinations can be accomplished in almost any medical dispensary where a physician is stationed. Nevertheless, important advantages to the patient and the

(7) Walker, W. J.: The patient with functional cardiovascular disorders (neurocirculatory asthenia). Am. Heart J. 42: 97-114, July 1951.

(8) Harrison, T. R.: Clinical aspects of pain in chest; pain arising from esophagus. Am. J. M. Sc. 209: 765-771, June 1945.

(9) Harrison, T. R.: Clinical aspects of pain in chest; pain arising from stomach. Am. J. M. Sc. 209: 771-783, June 1945.

(10) Harrison, T. R., and Resnik, W. H.: Pain in chest. In Harrison, T. R. (editor): Principles of Internal Medicine. The Blakiston Co., Philadelphia, Pa., 1950. pp. 21-40.

service accrue if this patient is subsequently seen in the cardiac clinic of a military hospital. The referring physician facilitates the evaluation by stating his personal impression of the patient, serial daily blood pressure readings, the pulse record, and his previous advice to the patient. The cardiologist can inform the field medical officer of the results of special tests, of verification or possible alteration in the diagnosis, and offer aid in treatment and appropriate disposition.

Patients with residual valvular lesions from rheumatic fever and congenital heart disease are best eliminated at the time of their initial physical examination. Patients who have a history suggestive of rheumatic fever or heart disease should receive special attention from the examiner. In all physical examinations of the heart, the room should be quiet and preferably small and separated from the rooms used for the remainder of the examination. The diaphragm-type stethoscope should be used in the aortic areas and along the left sternal border to detect faint aortic diastolic murmurs. A bell-type stethoscope with the patient in the left lateral decubitus position should be used in all questionable cases to detect the often faint localized murmur of mitral stenosis. It is to the credit of the examiners that so few patients with congenital and valvular heart disease escape detection and elimination in the rapid routine examinations of large numbers of recruits.

Angina pectoris and myocardial infarctions are rarely seen in young servicemen and are not a frequent cause of their cardiovascular complaints.

It is particularly important that the cardiologist see those patients with psychogenic cardiovascular reactions, functional murmurs, and those concerned about the possibility of having a cardiac disease. These patients' diagnoses can be confirmed; but, more important, they can be subjected to a thorough-going examination which may be of greater value in reassuring the patient than they are in establishing the diagnosis. The patients with functional murmurs and with no disease can be returned promptly to the field, assured that they are fit for duty. Many with mild psychogenic cardiovascular reactions will respond to superficial psychotherapy and be fit for duty. Those who do not respond promptly are joint problems of the cardiologist and psychotherapist and ordinarily do not warrant the prolonged tedious therapy required for their rehabilitation in the service because they are prone to relapse in situations of stress.

SUMMARY

In a study of 163 ambulatory servicemen with cardiovascular complaints, one-third of the patients were suffering from psychogenic cardiovascular disturbances. Another one-fifth had no disease or a functional cardiac murmur not related to heart disease. Angina pectoris and other cardiovascular causes of sudden death are rare causes of cardiovascular

complaints in servicemen. Although most cardiovascular complaints of servicemen can be diagnosed with the aid of the ordinary equipment available in the medical dispensary, the reassurance which the patient derives from detailed study at a military hospital often justifies his referral to the cardiac outpatient department of that hospital.

BOOK REVIEW

Urological Pathology, by *Peter A. Herbut,* M. D., Professor of Pathology, Jefferson Medical College and Director of Clinical Laboratories, Jefferson Medical College Hospital, Philadelphia, Pa. Two volumes. 1,247 pages; 527 illustrations, 2 in color. Lea & Febiger, Philadelphia, Pa., publishers, 1952. Price $24.

There has been a conspicuous absence of good textbooks devoted to the pathology of the genitourinary system. These two volumes are a welcome addition to our libraries. The author presents his subject in an orderly manner from a regional point of view, dealing with each organ under the headings of congenital anomalies, inflammations, tumors, and mechanical disturbances. Each chapter is preceded by a concise but adequate description of the embryology, anatomy, and physiology of the respective region.

Volume 1 is devoted to the pathology of the urinary system and volume 2 to the genital system. The illustrations are ample and carefully selected. Each illustration has a descriptive legend which can be used for quick reference. An outstanding feature is the liberal reference to the literature of the past 25 years found in the complete bibliography which follows each chapter. Perhaps too much space is devoted to symptoms and treatment in a text of this type, but the author, in his preface, states that he has included these items to broaden the usefulness of his work.

A thorough and excellent description of the various pathologic processes involving the organs of the genitourinary tract is presented. The many classifications of tumors, particularly those of the kidney and testis, are summarized and simplified. The subject of prostatic carcinoma is thoroughly reviewed and discussed in the light of recent advances in therapy. A brief description of exfoliative cytology in the diagnosis of bladder and renal tumors is presented, but the author states that this is not a substitute for careful clinical examination. The same is true for the diagnosis of prostatic carcinoma by examination of the prostatic secretions. This textbook should prove useful to urologists in practice and those who are preparing for board certification.

—*Col. J. W. Schwartz, MC, U. S. A.*

Foreign Body Granulomas Associated With Traumatic Neuroma

Alan Raftery, *Lieutenant Commander, MC, U. S. N.* (1)

RANDERATH (2), in a study of 900 traumatic neuromas which came under his observation in the European theater in World War II, observed granulomatous reaction to foreign bodies in 51 percent. Clothing, dirt, sand, and grease were the materials most commonly encountered in wounds of the extremities by Randerath (2) and McEvan (3). The mechanism by which foreign bodies are introduced into wounds of entrance and exit caused by high velocity missiles has been elucidated by Callender (4) and Dziemian and Herget (5). Microscopic study of traumatic neuromas occurring as a result of peripheral nerve injuries in Korea, the subject of this article, also revealed a high incidence of granulomas due to foreign bodies.

MATERIAL AND METHODS

Thirty-three traumatic neuromas occurring as a result of missile injuries incurred in combat in the first year of hostilities in Korea were selected for study. All specimens were from nerves of the extremities. The time interval between nerve injury and extirpation of the neuroma was from 4 to 8 months in the 14 cases in which this information was available. A single representative section, stained with hematoxylin and eosin, was studied in each case. In addition to routine microscopic examination, polarized light was employed to aid in the recognition of vegetable fibers and crystals.

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(1) Armed Forces Institute of Pathology, Washington, D. C.

(2) Randerath, E.: Zur Frage der Heilung schussverletzter peripherer Nerven mit besonderer Berücksichtigung der Häufigkeit und Bedeutung der Fremdkörperentzündung. Chirurg. 17-18: 241-244, Mar. 1947.

(3) McEvan, J. S.: Discussion. In Coleman, C. C.: War wounds of nervous system. Ann. Surg. 113: 712-719, May 1941.

(4) Callender, G. R.: Wound ballistics; mechanism of production of wounds by small arms bullets and shell fragments. War Med. 3: 337-350, Apr. 1943.

(5) Dziemian, A. J., and Herget, C. M.: Physical aspects of primary contamination of bullet wounds. Mil. Surgeon 106: 294-299, Apr. 1950.

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OBSERVATIONS

Granulomatous inflammation due to foreign bodies was found in 26 of the 33 cases; 21 contained foreign bodies other than suture material—cotton fibers, crystals and granular or amorphous masses. Cotton fibers, presumably from clothing, were present in 20 and were differentiated from suture cotton by the diffusion of fiber fragments through the tissue and by the marked variation in diameter and shape (fig. 1). Crystalline foreign bodies were encountered in 14 cases. These were optically active and had the features of silica crystals. Some resembling talc may have been introduced into the wound at the time of debridement. Amorphous material, noted in 12 cases, varied in appearance, but was either pigmented, irregular and granular, or hazy, nonrefractile, and irregular. Associated with this amorphous material were empty spaces,

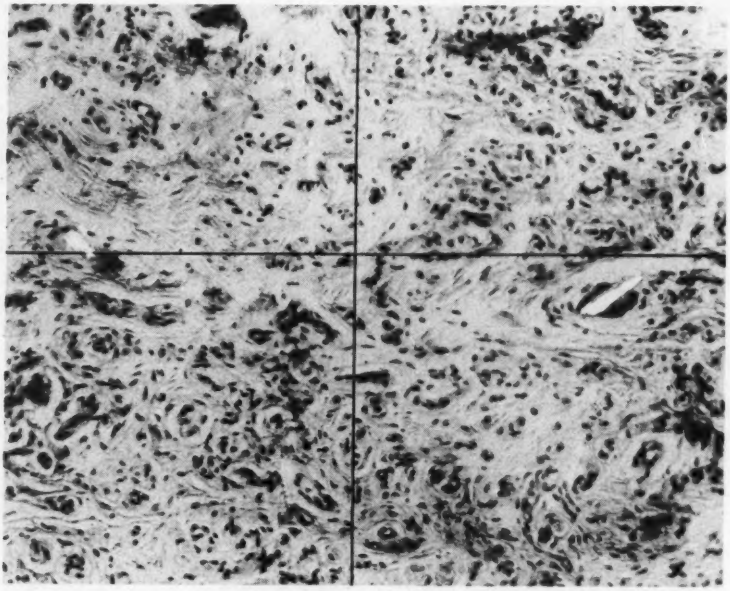

Figure 1. Section photographed under polarized light showing cicatricial tissue surrounding proliferated neurilemmal sheaths. Two optically active fragments of cotton fiber, engulfed by foreign body giant cells, are evident.

suggesting that fat or grease had been dissolved in processing the sections preliminary to staining (fig. 2). Two or more kinds of foreign body were found in 16 instances. In all cases the foreign bodies were associated with the cicatricial tissue. They were found in the proximal stump of the neuroma in 5 cases and in the distal stump in 2.

DISCUSSION

The high incidence of foreign body reaction in these traumatic injuries could be ascribed to several factors. Because of the nature of

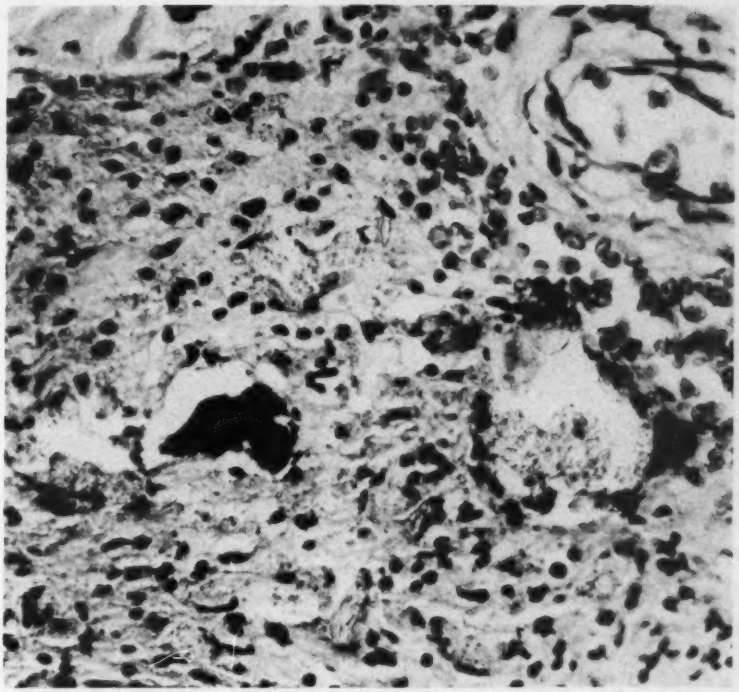

Figure 2. Cicatricial tissue invaded by small round cells and containing a pigmented irregular mass, nonrefractile amorphous debris, and washed-out areas suggestive of dissolved material. A distorted giant cell is engulfing the amorphous debris.

the wounds to which they give rise, high velocity missiles from modern weapons tend to increase the frequency with which gross contamination of the wound occurs. The clothing worn in Korea supplies much of the cotton fiber commonly found in these wounds. The mud supplies many of the amorphous foreign bodies encountered. The increased use of antibiotics has decreased the need for wide débridement. In view of the first 3 factors and of the high incidence of these foreign body reactions, more careful débridement of wounds involving peripheral nerves should be considered in each case. The deleterious effects of the crystals resembling silica in these foreign body granulomas may be delayed. Ayres et al. *(6)* in a study of subcutaneous granulomas have observed marked reaction to these crystals as late as 30 years after injury.

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(6) Ayres, W. W.; Ober, W. B.; and Hamilton, P. K.: Post-traumatic subcutaneous granulomas associated with crystalline material. Am. J. Path. 27: 303-315, Mar.-Apr. 1951.

SUMMARY

Foreign body granulomas were found associated with 79 percent of 33 traumatic neuromas resulting from missile injuries incurred in the Korean campaign. The foreign bodies were of three types: cotton fibers from clothing, crystalline material resembling silica, and amorphous material. Careful débridement in this type of injury will decrease incidence of foreign bodies and the resultant granulomatous inflammation detrimental to nerve healing.

BOOK REVIEW

Calculation of Industrial Disabilities of the Extremities, by *Carl O. Rice,* M. D., M. S., Ph. D., F. A. C. S., Clinical Associate Professor of Surgery, University of Minnesota Medical School, Surgical Staff, St. Barnabas Hospital, Minneapolis, Minn. Drawings by *Jean E. Hirsch.* 284 pages; 204 illustrations. Charles C Thomas, Publisher, Springfield, Ill., 1952.

This well-organized monograph is intended primarily for use by physicians in industrial medical practice. I agree with the author that any evaluation of disability by a physician must be described in terms that are compatible with the Industrial Law and that there is a great need for establishing uniform acceptable standards and terminology for use by physicians and industrial commissions. The physician is responsible for defining anatomic and functional defects and the industrial commissions are responsible for translating the physician's definitions and establishing financial remunerations for defects incurred. A high measure of success in describing and portraying disabling defects has been attained through the use of diagrams showing the normal range of motion of the extremities and their component parts. The proposed methods for calculating disability assigns relative values to various degrees of limitations of motion. The author defines the various disabilities in lay terms.

The chapter on historical considerations presents an enlightened summary of the various practices used by physicians in the past in describing and evaluating disabilities of the extremities. The physician who makes only an occasional estimate of disability will particularly appreciate the subject index and tabulation of contents. The book contains formulations and equations for arriving at a determination of either percentage loss of the use of an extremity or its equivalent in terms of average weekly indemnity.

—*Lt. Col. E. J. Debne, MC, U. S. A.*

The Value of True Centric Relation

Edward Novick, *Captain, DC, U. S. A.*

ONE important aspect of periodontal treatment is the equilibration of occlusion. It is not only important in patients with some periodontal disease but also in those in danger of developing a periodontal disease. It is important to perform prophylactic grinding to relieve traumatic occlusion on individual teeth. On many occasions it is sufficient to relieve plunger cusps and reshape marginal ridges. Relieving a tooth in traumatic occlusion frequently demands a great deal of time because as one tooth or area is relieved another area goes into premature contact. Besides the damage to the periodontium, pathologic processes may occur in the mandibular joint. Thoma *(1)* stated: "Intra-articular changes occur which may be due to minor trauma resulting from functional disturbances associated with abnormalities of the occlusion of the teeth. The occlusion of the teeth is an important part in the articulation of the mandible. The greater part of the force exerted during mastication is borne by the dentulous part of the jaw, but if the occlusion is changed by wear, or if the posterior teeth are lost, a great deal of this force is shifted to the joint."

The above is particularly true in patients who are partially edentulous. In order to masticate properly, these patients often go into a centric relation of convenience in contradistinction to a true centric relation. A centric relation of convenience may be defined as that position which the patient assumes to establish a maximum contact of the upper and lower occlusal surfaces. It may or may not coincide with the true centric relation. This is not only possible but probable where teeth have shifted, rotated, or extruded because of premature loss of adjacent teeth.

The structure of the mandibular joint, in which the mandibular condyle is held in position by various ligaments and muscles, allows it

(1) Thoma, K. A.: Oral Surgery. C. V. Mosby Co., St. Louis, Mo., 1948. pp. 861-864.

varied movements. On opening the jaws, the movement for some distance is hingelike followed by a gliding anteroposterior motion with a small amount of vertical movement. If both joints are not moved at the same time, lateral movement and even circular movement is possible.

From the periodontal point of view, it behooves us to see that our patients all masticate in a true centric relation. We can take advantage of the fact that the first opening of the jaws is a true hingelike action. By having the patient relax the jaw and moving it ourselves we can ascertain whether it is in true centric relation or centric relation of convenience. The patient's lower jaw is held lightly between the forefinger and thumb and jiggled up and down. If he is able to relax, little effort will be required. It may take some time to train him, depending on his emotional character and the confidence we can instill.

On jiggling the lower jaw until some contact is made, we can see the prematurities and check them with wax, articulating paper, et cetera. After the patient has been trained to close the jaws in a true centric relation, we can ask him to close them until the teeth first touch. We can see the movement from true centric relation to the present centric relation of convenience by holding the lips apart and having him close his jaws completely.

We have two methods of correcting this malposition of the mandible. We may either attain true centric relation by judicious grinding of the interfering cusps or fossas or we may onlay the teeth and so restore the lost vertical dimension. In the field, dentistry of this caliber can still be practiced. Two cases are reported as they were treated in Korea in a combat zone.

CASE REPORTS

Case 1. A 30-year-old man was referred to the clinic for an abscessed tooth. This was extracted and on his return for the treatment of caries, it was noticed that he had a cheilosis on both sides. According to the history elicited, this had existed for the preceding 6 months. He had been treated with gentian violet, merthiolate, and vitamin B compound with no improvement. At this time his bite was checked to see if the cheilosis might not be due to closure of the bite. He was seen to be biting in a closed centric relation of convenience (fig. 1) and in his true centric relation he would hit only in the left premolar area. L 6, 7, 8, and 14 and R 6, 8, and 14 had been extracted in 1944 and 1945; L 16 and R 16, in 1948; and R 12, on 10 July 1951.

In June 1948 an upper partial denture was constructed, but the patient could only tolerate it for 2 months before discarding it. He stated that the denture felt good and fit well, but that he could not eat with it in his mouth as his own teeth became very sensitive. The dentist had told him that the bite was good and he would just have to get used to it as there was nothing else to be done. The dentist had restored the missing teeth to the patient's centric relation of convenience,

i. e., using the centric relation in which most of the natural teeth interdigitated. On 4 October 1951 all his carious teeth were restored and he was sent for an upper and a lower partial dentures. These were constructed so that he would occlude in his true centric relation. Thick rests were made on L 13 and a mesial and distal rest on R 13 and L 15. On the upper denture, rests were made on L 5, R 5, and R 7. The rests were so constructed as to give the patient not only contact between the artificial teeth but with natural teeth also (fig. 2).

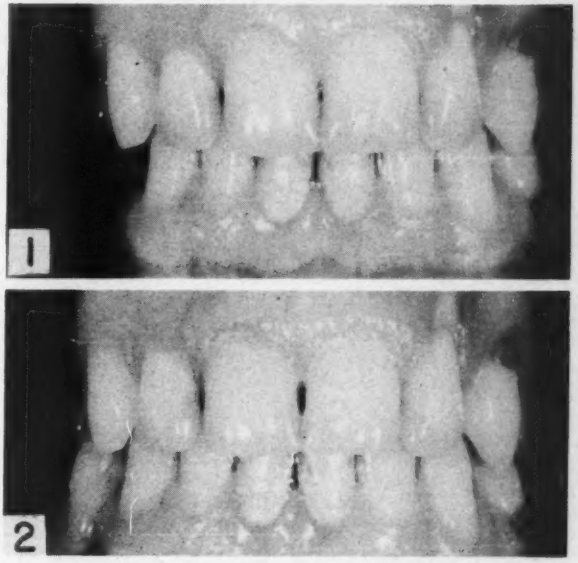

Figure 1 (case 1). Patient biting in centric relation of convenience. Figure 2 (case 1). Partial denture inserted. The interdental space between L 1 and R 1 is no longer obscured by L 9 and R 9.

He was comfortable from the beginning. On insertion only a minimum amount of grinding was necessary. Soon the cheilosis on the left side disappeared, followed closely by that on the right side. In this case it appears that the cheilosis was due to a closure of the bite. The patient was seen monthly and after 6 months he stated that his lips felt fine and he was more comfortable in eating than he ever had been.

Case 2. A 19-year-old man reported to the clinic for routine treatment on 11 October 1951. He had a congenital prognathic jaw relationship (fig. 3). On jiggling the jaw it was noted that the patient could make contact in the anterior region (fig. 4) and that in his normal occlusion he tripped these teeth. He was instructed to try to swallow his lower jaw and bring his front teeth together 10 times whenever he thought of it. L 16 was extracted on this day. R 14 and 15 and L 14 and 15

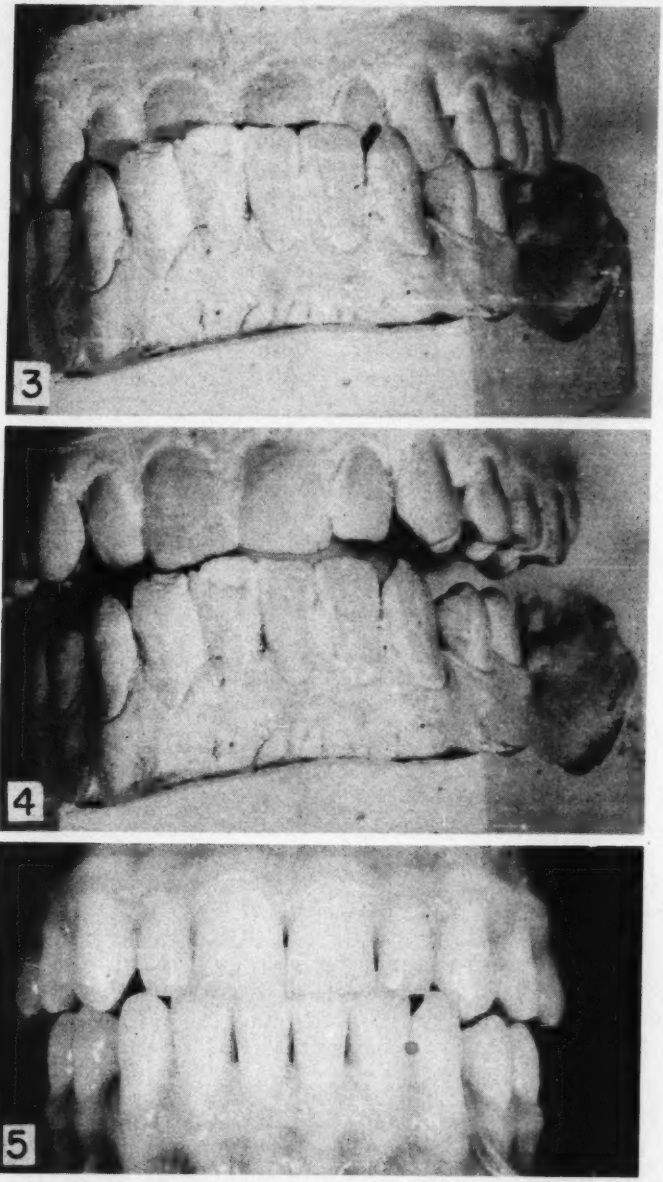

Figure 3 (case 2). Casts showing prognathic relationship. Figure 4 (case 2). Casts showing ability to contact R 1, 9, and 10 before grinding. Figure 5 (case 2). Grinding completed. Compare with figure 4 as to shift of midline.

had been extracted when he was 15 years old. The eruption and exfoliation of his teeth were normal. He further stated that about 1 year after the loss of the 4 molars he had more and more difficulty in attempting to bite a small object, such as a thread.

On 29 October impressions of the teeth were taken. The patient complained that his jaws were sore from the exercises, but was told to continue them. On 3 November grinding was started and L 1 and R 1 were brought into contact with L 9 and 10 and R 9 and 10. On 10 November the grinding was continued. The patient stated that the soreness in the jaw muscles had decreased a great deal after the first

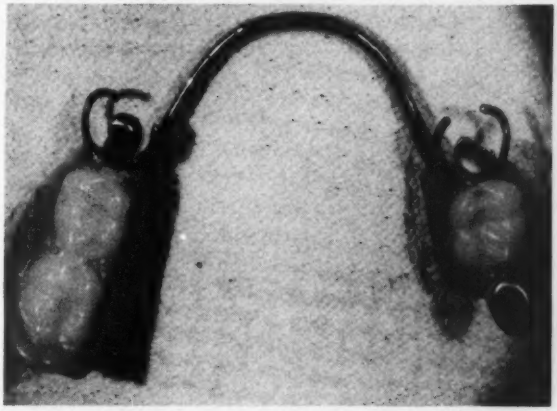

Figure 6 (case 2). Prosthetic applicance with thick rests.

grinding, but the teeth were now sensitive. L 2 and R 2 were in slight lingual version so a split tongue depressor was given the patient with instructions to bite on it with these teeth to try to force them labially 3 times a day for 10 pushes each time. By 17 November L 2 and R 2 had protruded labially slightly and the teeth were ground so that the 4 incisors were in contact. He was instructed to discontinue all previous exercises and to start trying to press the lower lip against the lower teeth with the upper lip and teeth.

On 24 November the grinding was continued and L 1 and 2 and R 1 and 2 were brought into contact with L 9 and 10 and R 9, 10, and 11. The patient then stated that it felt strange to go back to his old bite and that all the soreness in the teeth and jaw had disappeared. On 5 December the grinding was completed and L 1, 2, 3, and 4 and R 1, 2, and 3 were brought into contact with L 9, 10, 11, 12, and 13 and R 9, 10, 11, and 12 (fig. 5). At that time impressions were made of the bite and the patient was sent for prosthetic replacement. A lower removable partial denture was constructed with clasps and rests on R 16, R 13, and L 13. The rests were built up to establish articulation with the upper teeth (fig. 6).

This patient might have been more properly treated through orthodontic intervention. This may still be done to give him an occlusion without the aid of thick rests, but a cast full crown on R 16 to restore the occlusal level lost through tilting would be sufficient. Following treatment the patient was able to chew without any discomfort, with more ease than ever before, and is particularly delighted with the esthetic result. Because of the loss of the prognathism the patient looks less like a bull dog.

SUMMARY

The problem of creating a correct centric relation of occlusion can be solved in various ways. Particularly when dealing with young adults, the dentist must construct all appliances to this correct centric relation. We must not wait until pathologic periodontal or mandibular joint changes occur, but must institute prophylactic treatment at the earliest opportunity. By jiggling the jaw it is relatively easy for the dentist to obtain the correct centric occlusion and note the areas that hit prematurely. The dentist in the field can always find an alternate method of solving the problem.

BOOK REVIEW

Cardiac Emergencies and Heart Failure, Prevention and Treatment, by *Arthur M. Master,* M. D., Cardiologist, Mount Sinai Hospital, New York, N. Y., *Marvin Moser,* M. D., 1st Lt., U. S. A. F. (MC), Walter Reed Army Hospital, Washington, D. C.; Former Fellow, Cardiology, Mount Sinai Hospital, New York, N. Y., and *Harry L. Jaffe,* M. D., Adjunct Physician, Cardiology, Mount Sinai Hospital, New York, N. Y. 159 pages; illustrated. Lea & Febiger, Philadelphia, Pa., publisher, 1952. Price $3.

This monograph was written primarily for general practitioners to help them recognize and treat cardiovascular emergencies. It is clear and concise, yet adequate for a hurried reference. It is not intended to be a textbook on cardiology. About a third of the book is devoted to the identification and treatment of arrhythmias, about a fourth to coronary artery disease, and the balance to other cardiac emergencies and failure. The drugs that have been found most valuable are stressed. Case histories from the experience of the senior author are presented to illustrate specific conditions and the use of newer drugs. There is an excellent bibliography. The book is up to date and should make a valuable addition to the library of all general practitioners. A copy should be kept in the emergency ward of all hospitals.—*Col. E. M. Goyette, MC, U. S. A.*

Intestinal Obstruction Due to Intussusception Secondary to Mesenteric Injury

Report of a Case

Stephen M. McCoy, *Major, MC, A. U. S.* (1)

Arthur J. Crumbley, *Captain, MC, A. U. S.* (1)

SMALL intestinal obstruction due to intussusception is relatively common in any large series but the occurrence of ileal intussusception in an adult without intraluminal pathologic changes is quite rare in the absence of pulsion mechanism.

A 23-year-old Negro infantry soldier, previously in good health, was wounded in action in Korea on 20 May 1951 when he incurred a penetrating shell-fragment wound of the right flank and a shattering fracture of the right iliac bone. The fracture extended into the acetabulum of the right hip joint and there was marked displacement of the bone fragments. The patient was evacuated to a Mobile Army Surgical Hospital where an exploratory laparotomy was done because of the possibility of intraperitoneal injury. A right rectus muscle-splitting incision was made but no intraperitoneal pathologic change was found other than a hematoma of the right lumbar gutter.

The immediate postoperative course was uneventful. He received 8 blood transfusions. There was sanguineous drainage from the shell-fragment wound and from the middle portion of the laparotomy wound. Nasogastric suction was discontinued on the fourth postoperative day and the patient had a normal bowel movement 2 days later. He was evacuated by air from Korea and admitted to the 155th Station Hospital in Yokohama (2) on the ninth postoperative day.

On admission to this hospital the patient did not appear seriously ill. His temperature was 98.6° F. and his pulse was 80. There was a débrided 5-cm. wound of the right flank posteriorly and a healing right

(1) U. S. Army Hospital, Camp Yokohama, Japan.
(2) Now U. S. Army Hospital, Camp Yokohama, Japan.

rectus laparotomy incision. The abdomen was markedly distended but there was no evidence of peritoneal irritation and no mass was palpable. Rectal examination was negative. The erythrocyte count was 4,500,000, the hemoglobin was 13.8 grams per 100 cc., and the leukocyte count was 8,300 with a normal differential count. Urine and serology were negative. Roentgenograms of the chest were negative but those of the pelvis showed a comminuted fracture of the right innominate bone extending into the acetabulum with shattering and displacement of the bone fragments.

It was believed that the patient had a mechanical intestinal obstruction possibly due to involvement of the terminal ileum or cecum in a retroperitoneal hematoma near the fracture. A Miller-Abbott tube was inserted shortly after his admission to the hospital and in 30 hours the balloon had passed the pylorus. Roentgenograms taken at that time showed numerous, greatly dilated loops of small bowel with gradual advancement of the Miller-Abbott tube. The patient continued to be afebrile and comfortable. His abdomen remained moderately distended although less so than on admission. He was given intravenous fluids, vitamins, and aminoacids and his blood values remained within normal limits. On the twenty-second day following his injury, and after 13 days of Miller-Abbott intubation, a barium enema indicated there was no obstruction to the passage of barium through the large bowel and no abnormality of the cecum. The Miller-Abbott tube had advanced to the 5-foot mark and the patient's abdomen was soft, nontender, and flat. Although it was obvious from the position of the tube on the roentgenogram that the entire small intestine had not been traversed by the Miller-Abbott tube, the obstructing lesion clinically appeared to be resolving. The Miller-Abbott balloon was deflated, suction was discontinued (although the tube was left in place at the 5-foot mark), and a liquid diet was given on the twenty-fourth day following his injury.

Four days later (18 June 1951, 28 days after injury and laparotomy) abdominal pain developed and abdominal distention reappeared. The Miller-Abbott tube was again attached to bottle suction. Roentgenograms showed the presence of dilated loops of small bowel distal to the tip of the Miller-Abbott tube in the right midabdomen. It was apparent that the patient had a persistent mechanical obstruction and that exploration was indicated.

Laparotomy was performed 19 June 1951 (29 days after injury) under endotracheal anesthesia through the right rectus incision of the first laparotomy. The Miller-Abbott tube was found to have reached the midileum. The ileum distal to the tube was dilated to a diameter of 6 cm. The following findings are described:

1. Ileal intussusception, proximal into distal, for a distance of 7.5 cm. with the appearance of having been intussucepted for a considerable time and being obviously irreducible. No areas of gangrene were apparent. Numerous adhesions bound this loop to the adjacent

small bowel. A striking finding was the avascular, contracted, and scarred appearance of the mesentery of the intussuscepted ileum.

2. An enteroenteric (ileal) fistula was found distal to the intussusception involving 2 segments of ileum (12.5 and 8.5 cm., respectively) with an interval of 20 cm. of uninvolved ileum.

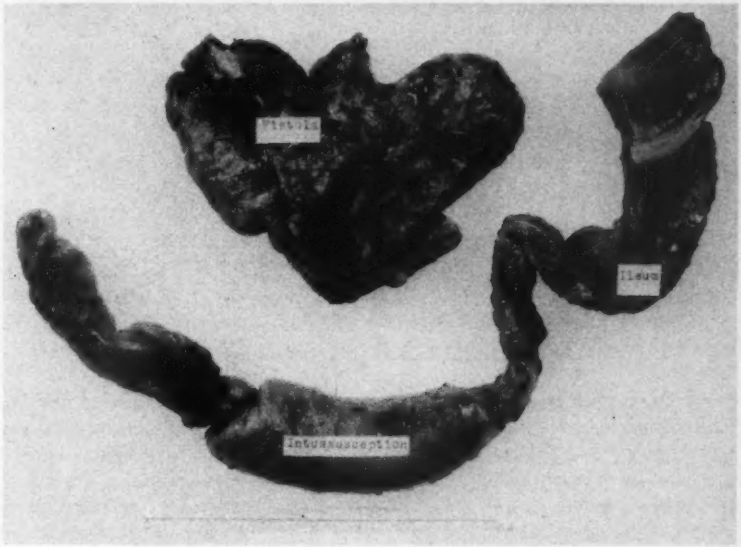

Figure 1. Upper: Segment showing the ileal fistula. Lower: A 35-cm. segment of intussuscepted ileum.

3. This entire section of ileum from the tip of the Miller-Abbott tube to within 8 inches of the ileocecal valve was involved in a volvulus of 180 degrees, clockwise. The most involved portion of the volvulus was 3.5 cm. above the proximal end of the intussuscepted intestine. There was no evidence of circulatory impairment due to the volvulus.

The involved segments were studied carefully, the volvulus reduced, and the pathologic changes noted. The intussusception and adjacent small bowel (a 35-cm. segment) and the 2 loops involved in the fistula were resected between clamps. Three open anastomoses were done, end to end, with 2 layers of interrupted 0000 silk. The wound was then closed with interrupted silk sutures without drainage.

Gross pathologic findings. The formalin-fixed specimen consisted of a segment of ileum, measuring 35 cm. in length, containing an intussusception which measured 7.5 cm. in length. No polyp was found. The bowel was edematous but not gangrenous. Three cm. above the proximal end of the intussusception there was an area of old hemorrhage and stricture of the bowel which appeared to have been traumatic in origin (figs. 1 and 2).

A second specimen consisted of 2 segments of bowel bound together by adhesions and what was apparently a fistula. One segment of bowel measured 12.5 cm. and the other 8.5 cm.

Diagnosis: (1) Intussusception, ileum; (2) fistula, ileum; (3) ileitis; (4) enteritis, subacute. It was believed that the cause of the intussusception and fistula was traumatic.

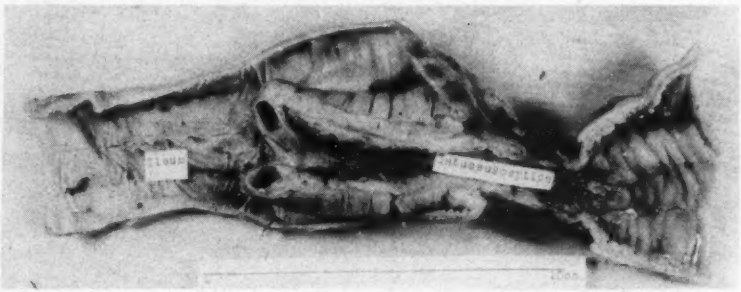

Figure 2. Cut section of the intussusception.

Postoperative course. The patient showed very little reaction and his abdomen remained flat. His temperature was elevated for 3 days but subsided when a wound abscess was drained on the fifth postoperative day; the laparotomy incision healed promptly thereafter. On the seventh postoperative day the Miller-Abbott tube was removed when the patient had a bowel movement. He was given a progressive diet. Ambulation had not been permitted because of the fracture of the right acetabulum. The wound of the right flank healed and the right hip joint had active flexion to 90 degrees without pain. On transfer to the zone of the interior, 53 days after being wounded and 24 days following his second operation, he was symptom-free and gaining weight on a regular diet.

The findings in this case were rather bizarre. It appears likely that the patient incurred a wound of the mesentery of the midileum, resulting in an intussusception. It would appear also that a segment of the bowel wall was damaged, perhaps contused. This resulted, not in a generalized peritonitis, but in an enteroenteric fistula because the contused bowel segments were adherent. The mechanism of the volvulus is not clear, and there was no redundancy of the mesentery in this region.

Mesenteric lymphadenitis is the usual pathology found in the idiopathic type of intussusception occurring in infancy. It is suggested that the exciting mechanism of idiopathic intussusception may be a reflex from the mesentery of the bowel segment.

SUMMARY

Laparotomy in a young, healthy soldier with a penetrating abdominal wound failed to reveal intraperitoneal pathology, but postoperatively

the patient had a persistent mechanical obstruction. Exploration, 29 days after he had been wounded, disclosed an intussusception, an enteroenteric fistula, and a volvulus, all of the midileum. Resection was followed by uneventful recovery. The case is of interest as perhaps shedding light on the mechansim of intussusception which may be due to mesenteric trauma or inflammation.

BOOK REVIEWS

Management of the Newborn, by *Arthur Hawley Parmelee,* M. D., Professor of Pediatrics, University of Southern California School of Medicine; Senior Attending Pediatrician, Los Angeles Childrens Hospital; Formerly Clinical Professor of Pediatrics (Rush), College of Medicine, University of Illinois, and Attending Pediatrician, Presbyterian and Cook County Hospitals, Chicago. 358 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1952. Price $7.

This is a practical book, written by a pediatrician who has spent many years in his specialty. Instead of attempting to cover his subject in detail, he has limited himself only to those aspects with which he has had close contact. Although this may lessen the value of the book as a reference source it enhances its readability and lends weight to the opinions expressed by the author on controversial subjects. The chapters entitled the premature infant, characteristics of the newborn, disturbances directly due to birth processes and disturbances due to various infections and other postnatal hazards are especially interesting. Although a number of the diseases and conditions which he describes are rare today, it is well for everyone working with the newborn to keep them in mind. The illustrations are excellent. One wishes that more had been included, but this undoubtedly would have put the book in the higher price range. Adequate bibliographies are given at the end of each chapter.—*Commander J. F. Shaul, MC, U. S. N.*

Air Pollution, Proceedings of the United States Technical Conference on Air Pollution. Sponsored by the *Interdepartmental Committee on Air Pollution, Louis C. McCabe,* Chairman. 847 pages; illustrated. McGraw-Hill Book Company, Inc., New York, N. Y., publisher, 1952. Price $12.50.

This monumental volume is a report of the conference held in Washington, D. C., in May 1950. The report of the general sessions is followed by 97 chapters by outstanding authorities in various scientific fields grouped under 7 main headings corresponding to the discussion panels: (1) agriculture, (2) analytical methods and properties, (3) equipment, (4) health, (5) instrumentation, (6) legislation, and (7) meteorology. It is inevitable that in so many articles by a large group of writers there should

be a certain amount of overlapping of material, but by virtue of skillful editing and the fact that most of the papers are short this has been kept to a minimum. The discussion following each paper is published along with the pertinent bibliographic references. The report of the second general session summarizes the findings of the various panels.

There is much in the book (not merely the health panel) that should be of interest to physicians, especially those engaged in industrial hygiene, and the importance of the subject has been tragically underscored by epidemics of respiratory and cardiac disease directly traceable to heavy concentrations of smog. This book will be a valuable reference work on the subject for many years. It is well indexed but unfortunately its attractiveness is greatly impaired by the impression of figures and type print being carried onto opposing pages by means of improperly dried ink.

—*Col. W. G. Brandstadt, MC, U. S. A.*

Surgery and the Endocrine System, Physiologic Response to Surgical Trauma, Operative Management of Endocrine Dysfunction, by *James D. Hardy,* M. D., F. A. C. S., Assistant Professor of Surgery, University of Tennessee Medical College. 153 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publishers, 1952.

This monograph provides a succinct rational basis for the surgeon's understanding of the role of endocrine glands in the treatment of the surgical patient. Rarely has such a complex subject as this been treated as simply and understandably as in this book's section on physiologic response to surgical trauma. Although the topic is still controversial, the author has presented his material in such a clear fashion that controversy is minimized and the reader is left with the feeling that there is hope that he too can understand the mechanisms and can use endocrine products to accomplish his ends rather than be irretrievably lost in the maze of partial knowledge that characterizes this field. Selye's "alarm syndrome" is summarized and the interrelation of the endocrine glands discussed briefly. Various facets of the metabolic aspects of body fluid regulation are considered as are the dynamics of nutrition and its relationship to response to trauma. A special section is devoted to endocrine therapy in surgical patients.

The second half of the monograph deals with the operative management of endocrine dysfunction. Although this section is well illustrated and condensed, it is of less value to the surgeon because it is a presentation of material and technics already available in standard surgical texts. The greatest value of this portion lies in its presentation of the problem of diagnosis of endocrine dysfunctions. The illustrations, tables, and charts are well chosen. Abundant references to the literature are included at the end of each chapter.

—*Col. D. S. Wenger, U. S. A. F. (MC)*

Atypical Eczema Vaccinatum

I. Louis Hoffman, *Colonel, U. S. A. F. (MC)* (1)

THERE are many differences in the definitions of eczema vaccinatum and generalized vaccinia. Pathologically both are the same (2). Some writers believe that Kaposi's varicelliform eruption is clinically indistinguishable from the generalized vaccinial eruptions (3-5). Others believe that the term is merely descriptive and should be discarded (6). Because the virus of herpes simplex has been isolated from several patients with Kaposi's varicelliform eruption, it is possible that it is a clinical entity (4, 7-9).

Etiology. The vaccine virus may be spread by hematogenous or lymphogenous route, or spread by direct or indirect contact from a site of vaccination. Vaccine virus has been recovered from the lesions of generalized vaccinia in human beings (5, 10-13), as well as from

(1) Reese Air Force Base, Lubbock, Tex.

(2) Parrott, R. H; Orr, W. W.; and Preisser, W.: Generalized vaccinial eruptions. Clin. Proc. Child. Hosp., Wash., D. C. 7: 104-113, Mar. 1951.

(3) Feriozi, D.: Generalized vaccinia; report of 2 cases in children. M. Ann. District of Columbia 19: 304-306, June 1950.

(4) Barton, R. L., and Brunsting, L. A.: Kaposi's varicelliform eruption; review of literature and report of 2 cases of its occurrence in adults. Arch. Dermat. & Syph. 50: 99-104, Aug. 1944.

(5) Tedder, J. W.: Eczema vaccinatum. Arch. Dermat. & Syph. 34: 1008-1023, Dec. 1936. Cited in footnote reference (4).

(6) Mustard, H. S., Jr., and Hedrick, P. W.: Generalized vaccinia; study of 15 cases. J. Pediat. 33: 281-294, Sept. 1948; correction 33: 629, Nov. 1948.

(7) Hershey, F. B., and Smith, W. E.: Generalized vaccinia in eczematous child; demonstration of virus and comment on "Kaposi's varicelliform eruption." Am. J. Dis. Child. 69: 33-36, Jan. 1945.

(8) Lane, C. W., and Herold, W. C.: Kaposi's varicelliform eruption; report of 5 cases. Arch. Dermat. & Syph. 50: 396-404, Dec. 1944.

(9) Riley, K. A., and Callaway, J. L.: Eczema vaccinatum; report of 2 cases with review of literature. J. Invest. Dermat. 9: 321-327, Dec. 1947.

(10) Jubb, A. A.: Generalized vaccinia. Brit. M. J. 1: 91-94, Jan. 23, 1943.

(11) Gins, H. A.; Hackenthal, H.; and Kamentzewa, N.: Neue Erfahrungen und Versuche über die Generalisierung des Vakzinevirus. Centralbl. f. Bakteriol. (Abt. 1, Hft. 6-8, Beihft.) 110: 115-118, Jan. 24, 1929. Quoted by Ellis, F. A.: Eczema vaccinatum: its relation to generalized vaccinia; report of 2 cases. J. A. M. A. 104: 1891-1894, May 25, 1935.

(12) Douglas, S. R.; Smith, W.; and Price, L. R. W.: Generalized vaccinia in rabbits with special reference to lesions in internal organs. J. Path. & Bact. 32: 99-120, Jan. 1929. Quoted in footnote reference (10).

(13) Ruchman, I., and Dodd, K.: Eczema vaccinatum; recovery of vaccine virus from cutaneous lesions of 2 children and demonstration of antibody rise during convalescence. J. Pediat. 33: 544-551, Nov. 1948.

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the viscera of experimental animals. Most of the cases occur in infants or children *(14)*. The greatest single predisposing factor is previous skin disease such as eczema, seborrheic dermatitis, pyoderma, burn, and allergic purpura *(13-17)*. I would like to add recent recovery from varicella.

Transmission. The virus is readily transmissible from person to person. The incubation period is from 1 to 7 days in persons vaccinated and from 2 to 3 weeks by indirect contact *(14)*. The incidence varies from 1 case in 10,000 vaccinations to 1 case in 900,000 vaccinations *(6)*.

The complications of vaccinations involving the skin are (1) those due to direct contact with vaccinia virus (secondary vaccination) near the original site, at distant sites in the absence of previous skin disease (autoinoculation), and at distant sites in the presence of previously diseased skin (eczema vaccinatum); (2) those due to hematogenous spread of virus such as exanthems following or during the process of vaccinia and true generalized vaccinia in a narrow sense with no previous skin disease; (3) eruptions coincidental with vaccinia; and (4) mixed inoculation or infection of the vaccination site, e. g., tetanus or syphilis *(2, 18)*.

The *mortality* varies from 0.3 to 1.2 per million vaccinations *(10, 19)*.

Clinical history and findings. In generalized vaccinia there is (1) a history of preceding skin disease in most cases; (2) a history of recent vaccination or contact with a recently vaccinated person, but no history of contact with smallpox; (3) sustained fever, usually gradual in onset; (4) toxicity; (5) an eruption of the successive stages of vaccinia on asymmetrically scattered areas of the body, frequently on sites of distribution of previous eczema; (6) pruritus; (7) lymphadenopathy; (8) hepatosplenomegaly; and (9) varying degrees of local edema, weeping, and superinfection of affected skin areas *(2)*. The duration and course of the illness depend on the severity of infection. Usually there are no prodromes as in variola and no fall of fever with the onset of rash. The usual lesions seen are umbilicated pustules from 6 to 10 mm. in diameter.

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(14) Greenberg, M.: Complications of vaccination against smallpox. Am. J. Dis. Child. 76: 492-502, Nov. 1948.

(15) Rolleston, J. D.: Generalized vaccinia. Brit. J. Child Dis. 34: 187-191, July-Sept. 1937.

(16) Davidson, L. S. P., and Davis, L. T.: Generalized vaccinial reactions in allergic subjects. Lancet 2: 103-104, July 24, 1943.

(17) Nimpfer, T.: Über Variola-Vaccinainfektion von Brandwunden im Verlaufe einer Stationsinfektion. Arch. f. Dermat. u. Syph. 174: 518-524, 1936. Quoted in footnote reference *(10)*.

(18) Paschen. Quoted by Tedder, J. W.: Eczema vaccinatum. Arch. Dermat. & Syph. 34: 1008-1023, Dec. 1936

(19) McKhann, C. F., and Ross, R. A.: Generalized vaccinia and eczema vaccinatum. M. Clin. North America 22: 785-794, May 1938. Cited in footnote reference *(2)*.

Laboratory aids (2) to diagnosis are isolation of the virus *(13)* and indirect evidence of the presence of vaccinia virus such as (1) demonstration of antibody rise during convalescence by neutralization tests or complement fixation *(13)* and (2) Paul's test *(20)* in which a scarified rabbit cornea is inoculated with material from lesions. If vaccinia or variola virus is present, panophthalmitis will follow and histologic section of the cornea may show inclusion bodies typical of the cowpox-smallpox group (Guarnieri bodies).

TABLE 1. *Differential diagnosis between generalized vaccinia and varicelliform eruption (9)*

	Generalized vaccinia	Varicelliform eruption
Recent vaccination	+	−
Recent herpes simplex	−	+
Greatest age incidence	Children	Adults
Type of lesion	Papules or umbilicated pustules	Herpetic groupings
Rabbit cornea		
Herpetic inclusion bodies	−	+
Guarnieri bodies	+	−
Evidence of immune bodies		
Herpes simplex	−	+
Vaccinia virus	+	−

Differential diagnosis (2). With an adequate history, the diagnosis of generalized vaccinia usually should not be difficult. Because the findings in Kaposi's varicelliform eruption are so similar and because the term "varicelliform eruption" may be used synonymously with generalized vaccinia, table 1 may be helpful. Variola, impetigo, erythema multiforme bullosum, multiple vaccination by autoinoculation, herpes zoster, and pustular syphilis must also be considered in the differential diagnosis *(6)*.

Prevention. Vaccination is contraindicated in a child with eczema (or a history of eczema), leprosy, the lymphomas and certain other dermatoses. The latter two may be accentuated during the vaccinial reaction *(21)*. Vaccination accomplished in the first few months of life may prevent complications in children destined later to develop skin diseases. Any person to be vaccinated should be questioned thoroughly for eczematous disorders in himself or potential contacts. No person recently vaccinated should be permitted contact with an eczematous person. This is to prevent a secondary vaccination of the eczematous skin area which might cause eczema vaccinatum.

(20) Collett, R. W., and Kennedy, R. L. J.: Accidental vaccinia; report of 2 cases in infants, with eczema vaccinatum in 1 case. Proc. Staff. Meet., Mayo Clin. 23: 380-382, Aug. 4, 1948.

(21) Leake, J. P.: Questions and answers on smallpox and vaccination. Pub. Health Rep. 42: 221-238, Jan. 28, 1927; also U. S. Nav. M. Bull. 25: 461-475, Apr. 1927.

Patients with generalized vaccinia should be completely isolated *(2)*. I would like to add that patients recently recovered from varicella should not be vaccinated until at least 3 months have intervened between full recovery and the vaccination.

Treatment includes such dietary, environmental, antihistaminic measures as may be required to prevent allergic manifestations. I would like to add the use of cortisone or ACTH. Antibiotics should be given to prevent superinfection. Symptomatic dermatologic therapy, such as saline or potassium permanganate soaks, are usually helpful along with general supportive therapy. Recent reports *(22, 23)* indicate that aureomycin and chloramphenicol are of no proved benefit in the treatment of generalized vaccinia except to prevent superinfection. Evans *(24)* has advocated the use of immune serum or whole blood from recently-vaccinated persons. Gordon *(25)* stated that the virus of vaccinia is susceptible to potassium permanganate and suggested its use in wet compresses for widespread vaccinial eruptions.

CASE REPORT

A 1-year-old boy was admitted to the hospital with a generalized papulovesicular eruption, including the mucous membranes of the mouth and pharynx, a temperature of 102° F., and marked irritability. There was a past history of mild eczema of the face which cleared up with dietotherapy and topical medication when he was about 7 months old. The mother had had allergic rhinitis. Five weeks before admission to the hospital, the child had a moderate case of varicella which cleared up completely in about 3 weeks. Two weeks later he was successfully vaccinated for smallpox and 8 days after the vaccination a papulovesicular eruption broke out over his face and rapidly spread over his trunk and extremities (fig. 1). The site of vaccination was over the insertion of the deltoid muscle on his left arm. The technic of vaccination was the multiple puncture method in a very small area after the skin had been prepared with acetone. The punctures were superficial so that no blood had been drawn. Some of the vesicles were umbilicated; an equal number were clear and nonumbilicated. The remaining lesions were papules with a small surrounding zone of erythema. The mucous membranes of his mouth, tongue, and oral pharynx were inflamed and showed aphthoid ulcers. His cervical and axillary lymph nodes were palpable. His nasal mucosa and conjunctivas were moderately inflamed. There was no eosinophilia. He was treated with 1 gram of aureomycin and 50 mg. of cortisone daily for 7 days.

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(22) Perry, F. G., and Martineau, P. C.: Eczema vaccinatum; rapid recovery following treatment with aureomycin. J. A. M. A. 141: 657-658, Nov. 5, 1949.

(23) Fasal, P.: Eczema vaccinatum successfully treated with chloramphenicol. J. A. M. A. 144: 759, Oct. 28, 1950.

(24) Evans. Cited in footnote reference *(2)*.

(25) Gordon, M. H.: Vaccinia as complication of vaccination. (Correspondence.) Brit. Med. J. 2: 822, 1941.

His fever dropped to normal within 48 hours and stayed normal. His irritability markedly lessened and he did not appear to be very ill 24 hours after treatment was begun. The vesicles crusted over and the papules underwent resolution, leaving pale pink macules within a period of 3 weeks. These macules eventually faded out, leaving no scars.

DISCUSSION

This eruption satisfies most of the criteria of eczema vaccinatum in that there was a recent vaccination, it occurred in a child, some of the vesicles were umbilicated, and there was a past history of

Figure 1. Photograph showing lesions of face, trunk, and extremities.

eczema and a recent predisposing skin lesion (varicella). The eruption was accompanied by fever, toxicity, pruritus, and lymphadenopathy. These lesions may have been modified by the cortisone therapy. The antibody response in the skin and the dose and virulence of the strain of virus may also have been modifying factors in producing this atypical eruption. A diagnosis of Kaposi's varicelliform eruption was considered because some of the vesicles were clear and nonumbilicated. A mixed vaccinial and herpes simplex virus infection is a possibility. A Stevens-Johnson syndrome was ruled out. I believe this was an atypical eczema vaccinatum.

Besides the atypical eruption, this patient presented 2 points of interest: the possible role played by (1) the recent recovery from varicella in spreading the vaccinia virus by secondary vaccination at distant sites in the presence of previously diseased skin; and (2) cortisone therapy in modifying the skin lesions and preventing more serious symptoms. Cortisone therapy was used because of the possibility of an allergic factor being associated with this condition and because it would help the body mobilize its defenses more quickly.

ADDENDUM: A week after seeing this patient I saw a similar condition in a 6 months' old child, with a history of vaccination following a recent recovery from varicella.

BOOK REVIEW

Callander's Surgical Anatomy, by *Barry J. Anson,* M. A., Ph. D. (Med. Sc.) Professor of Anatomy, Northwestern University Medical School, and *Walter G. Maddock,* M. S., M. D., F. A. C. S., Elcock Professor of Surgery, Northwestern University Medical School. 3d edition. 1,074 pages; 929 illustrations. W. B. Saunders Co., Philadelphia, Pa., publishers, 1952.

The value of this well-known book has been enhanced in this new edition. Over 100 new illustrations and much new material on applied anatomy from recent textbooks and periodicals have been added. New procedures are adequately presented in the fields of surgery of the thorax, cardiovascular system, esophagus, colon, gentiourinary tract, and female pelvis. The subject of inguinal hernia is especially well covered. Anatomic variations in the circulatory system, hepatic pedicle, and distribution of the vagus nerves over the lower end of the esophagus are well illustrated. This thoroughly fine book is recommended for the student, resident, and practicing surgeon.

—*Commander J. J. Zuska, MC, U. S. N.*

Dentigerous Cyst

Report of a Case

Martin J. Kelley, *Captain, DC, U. S. A.*

A 20-year-old man presented himself for treatment at the dental clinic, Fort Dix, N. J., on 28 June 1951 complaining of a bad taste, noticed occasionally in the preceding year. Examination of the oral cavity showed gross caries in both arches. The left central incisor was depressed lingually and rotated distally. The left lateral incisor, also rotated, appeared discolored and nonvital. The left cuspid, which was erupting palatally, only a portion of its crown being visible, was in the area of the rugas and above the lateral incisor. The palatal tissue surrounding the crown was inflamed and slightly edematous. The patient experienced only mild pain when pressure was applied here but no exudate was seen at this time. The cuspid had started to erupt about 1 year prior to examination. There was no evidence of a fistula and the other teeth in the maxilla appeared vital.

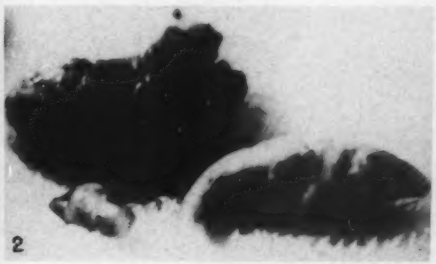


Figure 1. Preoperative roentgenogram showing supernumerary tooth, malposed central and lateral incisors, and impacted cuspid. Note radiolucent area. Figure 2. Cyst with impacted cuspid and supernumerary tooth.

Roentgenographic examination revealed a cuspid tooth situated palatally and above the root of the left lateral incisor. Its root was bent on itself at a 90° angle. The lateral incisor showed resorption at its root end. A supernumerary tooth was seen between the 2 central

incisors on the left side of the median suture. This was responsible for the malposition of the left central incisor. A radiolucent area surrounded these teeth but a sharp line of demarcation could not be demonstrated (fig. 1). A diagnosis of an infected dentigerous cyst was made and its removal with the involved teeth was proposed.

The cyst and the infected teeth were removed on 10 July under local anesthesia. The left central and lateral incisors and cuspid were removed first. When the mucoperiosteum was retracted and the area exposed, the supernumerary tooth was seen lying in a horizontal position

Figure 3. Postoperative roentgenogram showing regeneration of bone.

with its crown in the cystic area. On probing the area it was found that the cyst extended palatally and distally along the roots of both bicuspids. The bone surrounding the bicuspids had been destroyed by the expansion of the cyst which necessitated their removal. The area occupied by the cyst was completely accessible and it was removed in toto. Although the voided area was extensive, the buccal plate of bone was preserved. Sharp edges were trimmed smooth and it was left intact. The cavity was closed with several sutures after inserting a gelfoam pack. In areas of extensive bone destruction healing by second intention is expected. Figure 2 shows the cyst and removed teeth. The texture of the cyst was firm and its wall was thick.

On the following day the wound was irrigated with warm saline solution. On 16 July the sutures were removed and a dry iodoform dressing was placed in the wound as primary closure was not taking place. This dressing was changed every other day putting in a shorter length each

time. Granulation could be seen taking place along the base of the wound. On 1 August the dressing was removed and alginate impressions were taken for a partial denture. The patient was instructed to rinse his mouth with warm salt solution several times daily until 14 August when the denture was inserted. The patient was seen 26 August and postoperative radiographs were taken (fig. 3). The area appeared to be filling in satisfactorily.

The removed cyst measured 2 by 1.5 cm. The cyst wall was 0.2 cm. thick. Inner and outer surfaces were gray-white and the consistency was firm. In the microscopic sections the surface was seen to be covered by a thick layer of stratified squamous epithelium with marked acanthosis. Many rete pegs could be seen. In the underlying stroma, composed of fibrous tissue, there were large areas of hemorrhage, large numbers of plasma cells, lymphocytes, large mononuclear leukocytes, and a few polymorphonucleocytes.

BOOK REVIEWS

A Textbook of Clinical Neurology, With an Introduction to the History of Neurology, by *Israel S. Wechsler,* M. D., Clinical Professor of Neurology, Columbia University, New York; Consulting Neurologist, The Mount Sinai Hospital, Montefiore Hospital and Rockland State Hospital, New York. 7th edition. 801 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publishers, 1952.

This edition of a work originally published in 1927 is presented under the following headings: (1) Method of Examination, (2) The Spinal Cord, (3) The Peripheral Nerves, (4) The Brain, and (5) The Neuroses. Two additional chapters, entitled Trauma of the Nervous System and Introduction to History of Neurology, conclude the text. Minor errors in past editions have been corrected and neurologic concepts no longer tenable have been omitted. The treatment of infections of the nervous system has been revised; the treatment of neurosyphilis has been brought up to date; the treatment of brain tumors and injuries of the brain and spinal cord are presented in the light of newer concepts; cerebral aneurysms and angiography have been elaborated on; and electromyography and double simultaneous stimulation appear for the first time. Several new and better illustrations have been included.

The various clinical entities are described under one of the 5 main headings listed above. In most instances the descriptions are preceded by short paragraphs on the relevant anatomic and pathologic features, the author referring the reader to neuroanatomic, neurophysiologic, and neuropathologic texts for further correlation. Several of the more useful references to past and current literature immediately

follow the description of each clinical entity. As in previous editions, the chapters on psychologic diagnosis contain brief, concise descriptions of the several psychologic tests of most use to the neurologist.

This edition contains several confusion statements. On page 18 the reflex arc of the brachioradialis reflex is described as being through spinal segments 7 and 8, but on page 28 this reflex arc is listed under C-6 spinal segment. On page 180 the author classifies amyotonia congenita under the primary myopathies whereas most present-day authors, including neuropathologists, prefer to classify this entity under the progressive nuclear muscular atrophies. The author's definition of dysesthesia, on page 42, is contrary to the definition given in two standard medical dictionaries. There is an obvious misprint on page 257 where it is stated that the inferior oblique muscle moves the eye upward and inward.

The book is recommended to the beginner in neurology only as an adjunct to the basic works in neuroanatomy, neurophysiology, and neuropathology. For the neurologist it is a good text on bedside neurology.—*Lt. Col. J. W. Sumner, MC, U. S. A.*

Textbook of Clinical Parasitology, by *David L. Belding,* M. D., Professor of Bacteriology and Experimental Pathology, Emeritus, Boston University School of Medicine. 2d edition. 1,139 pages; illustrated. Appleton-Century-Crofts, Inc., New York, N. Y., publishers, 1952.

Protozoan, helminthic, and arthropod parasites of man are discussed systematically, adhering to their zoologic classification. Related organisms, not pathogenic for man, are treated briefly where necessary to prevent confusion with human parasites. The clinical manifestations and treatment of infestations with the individual parasites, as well as public health control measures, are adequately presented. Particular attention is given to the life cycles, modes of transmission, and immunity induced by the various parasites. A great deal of material is presented in 44 excellent, self-explanatory tables. Identification of parasites is stressed, many keys to assist in the differentiation of similar organisms are included with the text, and a separate section is devoted to a detailed description of technical methods. Seventy pages are devoted to parasiticidal drugs, insecticides, and repellents. Almost 2,800 bibliographic references are given, but of these, 50 refer to work published in 1949 and only 1 to work published as recently as 1950. Despite this failure to include some current material, and the abridgement of the clinical description of some of the diseases, the book should prove valuable for medical students, laboratory workers, and public health officials. Medical officers who must make or supervise the identification of parasites will be grateful for the many fine illustrations.—*Lt. Col. B. H. Sullivan, Jr., MC, U. S. A.*

Ectopic Megalo-Ureter

A Case Report

Charles Atamian, *First Lieutenant, U. S. A. F. (MC)* (1)

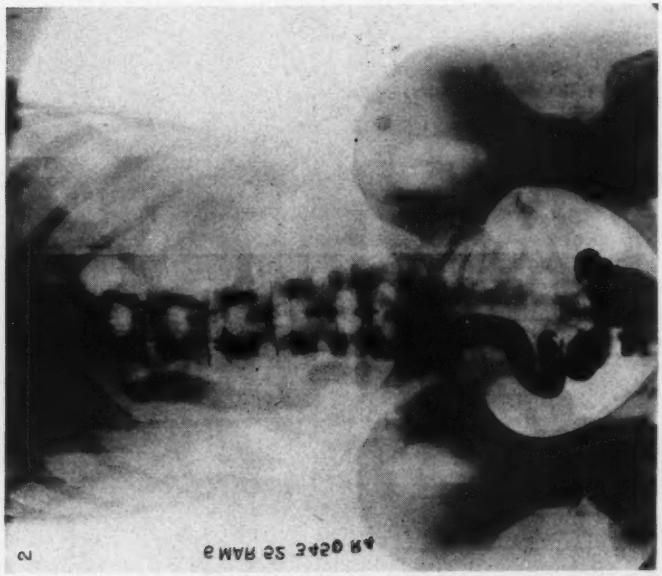
James K. L. Choy, M. D. (2)

A 26-YEAR-OLD white mother of 2 children, was seen in January 1952 complaining of urinary incontinence present since birth. This incontinence made it necessary for her to wear a vaginal pad which required frequent changes during the day as well as during the night. In earlier life, the condition was considered functional in origin. In addition to uncontrolled urine, she had had 2 episodes of right costovertebral angle and right upper quadrant pain that subsided in several days without treatment. Following an intravenous pyelogram, 3 cystoscopic examinations were performed; the first 2 were negative, but the third disclosed an ectopic megalo-ureter with a separate opening in the vagina. Inspection revealed a small opening several millimeters inferior to the normal urethral orifice. A No.5 ureteral catheter was passed about 12 cm. into the ectopic orifice and was palpable on the laterosuperior aspect of the vaginal wall (figs. 1 and 2).

Laboratory studies were normal except for numerous white blood cells in the urine. By cystoscopy and retrograde pyelography a normal ureter was demonstrated on each side. Figure 3 shows a normal left kidney but an atrophic right kidney. No communication was seen between the ectopic megalo-ureter and the normal right ureter.

In March 1952 after preliminary preparation with chloramphenicol, a nephrectomy was performed. Using the conventional approach, the right kidney was found to be atrophic and bifid. As demonstrated with pyelograms, the megalo-ureter arose from the superior aspect and the normal ureter from the inferior aspect of the kidney. The anomalous right kidney, megalo-ureter, and ureter were mobilized. The kidney pedicle was doubly clamped and ligated in the usual manner. These structures were then pushed down into the right iliac fossa. This wound was closed in layers with interrupted chromic catgut after inserting a Penrose drain in the region of the kidney pedicle. The patient was then placed in a supine position and through a right Gibson incision the kidney, which

(1) Forbes Air Force Base Hospital, Topeka, Kans.
(2) Urologic consultant to the Air Force and urologist at Medical Center, Topeka, Kans.



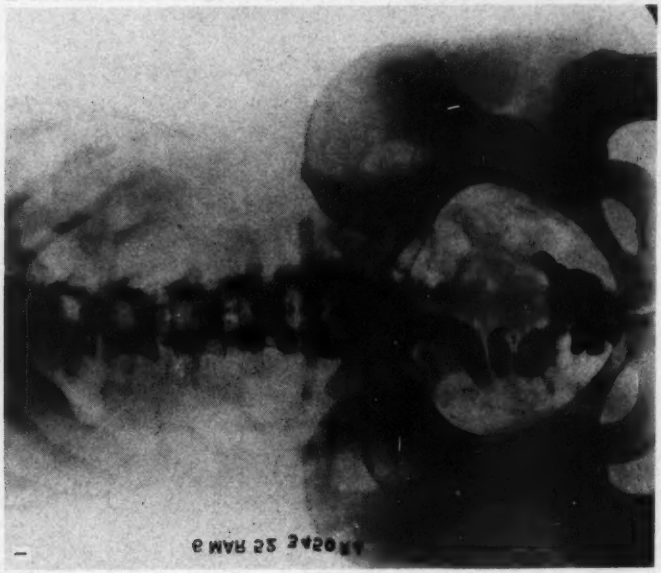


Figure 1. Roentgenogram showing megalo-ureter after injection of 20 cc. of contrast medium through catheter seen in lower part of film. Figure 2. Roentgenogram showing megalo-ureter after injection of 40 cc. of contrast medium and showing ectopic origin of ureter.

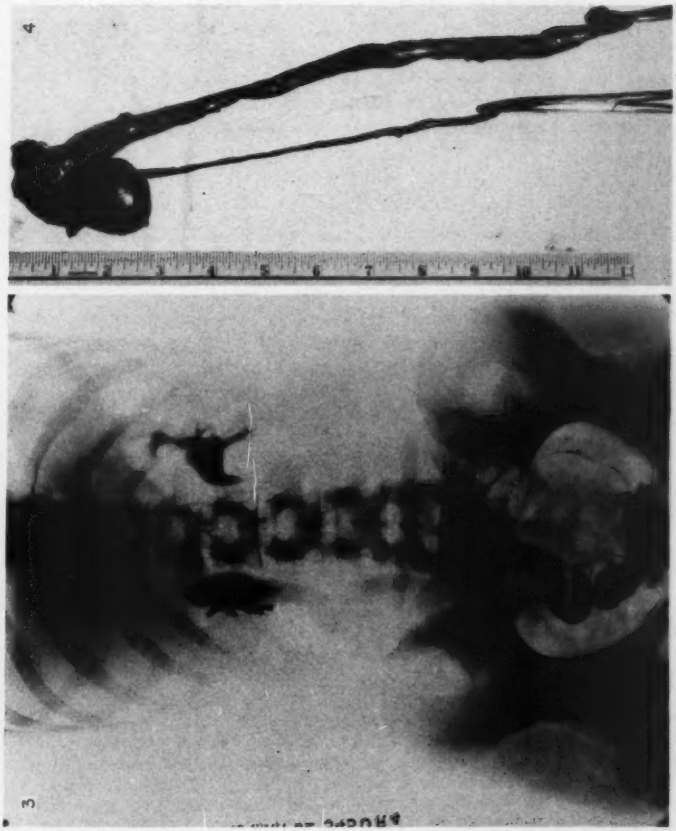


Figure 3. Roentgenogram showing megalo-ureter and difference in size of kidney calyces. Figure 4. Gross specimen after removal. Note groove separating each kidney pelvis.

was previously placed in the iliac fossa, was easily delivered. By blunt dissection the tortuous megalo-ureter was dissected all the way to the lateral aspect of the vaginal vault below the symphysis pubis. The distal end was doubly clamped, divided, and sutured with running chromic catgut. The normal ureter was clamped, divided, and tied just proximal to its entrance into the bladder and the kidney with both ureters was removed (fig. 4). This second wound was also drained. On microscopic examination areas of hypoplasia and chronic inflammation were identified. Transfusion with 500 cc. of blood was given during operation. This was repeated postoperatively. Penicillin and dihydrostreptomycin were given for 6 days. The drains were removed in 36 hours. The patient was ambulatory on the second postoperative day and discharged on the eleventh day. Urinary incontinence has been permanently corrected.

DISCUSSION

Urinary incontinence is frequently considered functional before an organic cause is ruled out. In the case reported, during a period of 26 years, the possible cause for the existing urinary incontinence had never been studied despite its presence from birth. As a result, this patient was forced to adjust to her incontinence. If indicated procedures had been performed, diagnosis and treatment could have been carried out much earlier. This, however, does not mean that diagnosis is always easy. On the contrary, in the experience of the senior author, numerous cystoscopic examinations may be necessary before the cause for the incontinence is discovered. The use of indigocarmine intravenously in conjunction with cystoscopy is a diagnostic aide.

BOOK REVIEW

The 1951 Year Book of Urology (November 1950-October 1951), edited by *William Wallace Scott*, M. D., Ph. D., Director, James Buchanan Brady Urological Institute, The Johns Hopkins Hospital; Urologist-in-Charge, The Johns Hopkins Hospital; Professor of Urology, The Johns Hopkins University School of Medicine. 383 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1952. Price $5.50.

This is a concise and complete compilation of the noteworthy American and foreign urologic literature covering the period from November 1950 to October 1951. It contains a large number of excellent illustrations and editorial comments. The subject index is difficult to use because many subjects are grouped under generalized headings rather than being classified individually. This is my only criticism of this publication.—*Commander M. S. Curtis, MC, U. S. N.*

Fractured Tooth Roots in the Maxillary Sinuses

James E. Chipps, *Lieutenant Colonel, DC, U. S. A.* (1)

Joseph A. Budetti, *Lieutenant Colonel, MC, U. S. A.* (1)

SEVERAL cases of fractured roots in the maxillary sinuses and of antro-oral fistulas following dental surgery have been observed here in recent months.

Although some of the violations of the sinuses during dental operations are the result of inadequately planned procedures or of carelessness in operative technic, this accident occasionally occurs with even the most experienced operator. Hence, it should be accepted as a hazard in exodontia. The instant a root disappears from its socket into a maxillary sinus the dentist is no longer faced with a problem of dental extraction, but is confronted with the twofold problem of a contaminated foreign body within a sinus and of a communication between mouth and antrum. Treatment must be primarily directed toward prevention of a sinusitis and of an antro-oral fistula. Actually the problem is no longer in the dental field but belongs to the rhinologist. However, the two specialties are, or should be, closely allied and because the patient associates his new problem with the dentist, it should be jointly managed by him and the rhinologist.

Although no single method of procedure can be satisfactory in every circumstance, the following program in a military practice generally will produce the most favorable results:

1. Immediately discontinue the usual extraction procedures and explain the new problem to the patient in understandable terms.

2. Ascertain whether or not the root fragment is actually within the sinus. This can be done by gentle probing to establish the fact that the sinus membrane is actually punctured, or by closing the patient's nostrils and allowing gentle exhalation while the operator looks for evidence of air passage through the tooth socket. It often happens that the root fragment is merely wedged between alveolar bone and sinal membrane while the sinus itself remains intact. In such an event the

(1) Tokyo Army Hospital.

inexperienced operator should, without further effort at removal, refer the patient to a competent oral surgeon. Should the more experienced operator prefer to attempt removal himself, dental radiographs will probably demonstrate the root lying close to the apex of the socket. For removal, proper access, visibility, and the patient's co-operation are essential. To avoid puncture of the sinal membrane care must be exercised in properly positioning the patient, directing light, and employing hemostatics so that the working point of the instrument is observed at all times. The patient's co-operation can be obtained through careful explanation of its importance and through adequate anesthesia. The removal of the root fragment is then but a matter of adequate exposure by carefully removing overlying bone with small chisels and rongeur forceps. Exposure should be sufficient to permit picking out the root fragment with a small hook. Elevators and other heavy extraction instruments should not be used. After extraction of the root, sufficient buccal and lingual alveolar bone should be removed to permit closure of the socket by suturing the mucosa. The patient should be kept in the dental chair until there is a satisfactory clot in the socket. Antibiotics may be given prophylactically. The patient should be cautioned against blowing his nose and should be seen daily until the danger of acute sinusitis has passed.

3. We believe that should the root be found actually to lie within the sinus cavity, the Caldwell-Luc type of approach for its removal is the method of choice. Attempts at removal through enlarging the socket of entrance are not only frequently unsuccessful but lead to fistulization. Technics employing irrigation of the sinus under pressure, in the hope of flushing out the root, frequently lead to an acute sinusitis. The technic in which the maxillary third molar is removed and attempts are made to flush out the root through that socket by pressure irrigation through the socket of entrance is not recommended.

The socket of entrance should be immediately closed by suture of the mucosa after removal of sufficient alveolar bone and compressed until a blood clot has formed. The antrum is then exposed by an approach through the anterolateral wall. The incision through mucosa and periosteum should extend from the area of the lateral incisor to the area of the first molar in a slightly curved incision 4 or 5 mm. above the gingival attachment but well below the muscle attachments. Mucosa, muscle, vessels, and attached periosteum should be elevated in a single flap until the entire anterolateral wall of the sinus is visualized. The site for opening the bone will vary in individual cases, depending on the nature of the canine eminence. Usually it is best made above the bicuspids, its lower margin being sufficiently high above the root apexes to prevent undue damage to dental nerve or blood supply. The opening should be large enough to permit visualization of the entire sinal cavity. Sinal hemorrhage can be controlled by the insertion of sterile gauze sponges or adrenalin 1:10,000 tampons. Each sponge should be carefully examined on removal because the

root is frequently removed during sponging. If not, the root fragment can usually be visualized against the posterior wall after hemorrhage is controlled if the antrum is free of gross chronic pathologic changes. It is preferable to make an opening sufficiently large to permit adequate visualization than to depend on blind scoopings with the curette to locate and remove the root. After removal of the root, the sinus, if normal, can be closed by suture of the mucosal flap. Postoperatively, antibiotics should be used as a prophylactic against sinusitis. They can be discontinued on the fourth day and the sutures removed if the patient is symptom-free. If on entering the sinus, chronic inflammatory changes, such as mucosal hyperplasia and polypoid tissue, are noted, antrotomy should be completed by removing the involved mucosa and establishing an adequate nasal window for drainage through the inferior meatus. During removal of such tissue, care should be taken to examine all debris for the root fragment. If not removed in this manner, it can usually be found after removal of the polypoid tissue. The antrum should be packed with iodoform gauze or terramycin in oil packing, which is then brought out through nasal antrostomy. The oral mucosal incision is sutured. Antibiotics should be used postoperatively. The packing can be removed in from 48 to 72 hours, followed by daily antrum irrigation until there is a clear return.

The sinus is occasionally violated even without root fracture due to manipulation of the tooth during extraction. In such event, the *normal* sinus will usually heal without fistulization. The socket should be closed by suture, the patient cautioned against blowing his nose, and antibiotics given prophylactically.

We believe that when fistulas develop in such cases, it is usually because of a pre-existing sinusitis. We have frequently noted evidence of hyperplastic sinusitis in the opposite uninvolved antrum at the time of roentgenographic study of the fistula. This had led to a preliminary observation that the pathogenesis of antro-oral fistula lies not alone in the extraction of the tooth but in the pre-existing inability of the mucosa to undergo normal healing. The secretions accumulated under pressure use the alveolar opening for an outlet until fistulization has ensued. In all such cases, the fistula is probably unavoidable unless the sinal pathologic changes are recognized and proper therapy instituted. Detailed surveys of such sinusitis-fistula relationships are being prepared for future publication.

In the event of puncture of the sinal membrane in a dental operation, study of the sinus by antroscope and by roentgenography (employing iodized oil) is indicated. Should existing sinal changes be demonstrated, fistulization can then be prevented through adequate therapy.

In the event of chronic fistulization, the fistula can often be closed readily by the simple insertion of tantalum foil if provisions for adequate drainage of the sinus have been made (2).

(2) McClung, E. J., and Chipps, J. E.: Tantalum foil used in closing antro-oral fistulas. U. S. Armed Forces M. J. 2: 1183-1186, Aug. 1951.

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BOOK REVIEWS

Developmental Disorders of Mentation and Cerebral Palsies, by *Clemens E. Benda,* M. D., Director of Research and Clinical Psychiatry, Walter E. Fernald State School, Waverley, Mass.; Instructor in Neuropathology, Harvard Medical School; Assistant in Psychiatry, Massachusetts General Hospital; Lecturer, Postgraduate Seminar, Massachusetts Department of Mental Health. 565 pages; 102 illustrations. Grune & Stratton, Inc., New York, N. Y., publishers, 1952.

The purpose of this book is to acquaint the specialists in psychology, education, anthropology, psychiatry, pediatrics, and neurosurgery with the problems associated with disorders of mentation. The title is misleading in that the book is actually an excellent detailed textbook concerning developmental disorders of the brain, cerebral palsy, metabolic and degenerative diseases of the brain, and disorders of the total personality including Heller's disease, autism, and schizophrenia. The illustrations are unequaled in any other textbook or single source. Although interest in the incorporated subjects should apply to the various specialties he has named, the book will probably find its niche primarily in the libraries of the neurologists and physicians attached to institutions for the care of the feeble-minded.

—*Commander H. S. Colony, MC, U. S. N.*

Cellular Changes With Age, by *Warren Andrew,* Ph. D., M. D., Professor of Anatomy and Chairman of Department, The George Washington University School of Medicine, Washington, D. C. American Lecture Series Publication No. 127, A Monograph in American Lectures in Anatomy. 74 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $2.50.

In this short monograph the process of aging is discussed on the basis of anatomic and physiologic changes in the cells. The author skillfully condenses the results of research in this field. In the first 3 chapters he briefly discusses what is meant by aging, aging cells, and aging in cells of lower organisms. In the fourth chapter he deals with higher organisms, primarily man. Here the aging of cells of different types of tissues and systems is discussed. The concluding section deals with the question "Why organisms grow old and die?" Physicians and students of biology will find this monograph interesting but will become acutely aware of the limited knowledge in this sphere of gerontology and of the many problems still awaiting solution. An extensive bibliography is included.

—*Col. H. C. Gibson, MC, U. S. A.*

Primary Intestinal Tuberculosis

Elwyn Cavin, *Captain, MC, U. S. A.* (1)

PRIMARY intestinal tuberculosis is rare. Bockus et al. (2) reported 2 cases and summarized the literature since 1892. They concluded that the subject was inadequately treated or completely ignored in most American textbooks and emphasized that no adequate roentgenologic description of this disease had appeared in the literature. Important roentgenologic findings in their patients were areas of constriction and dilatation in the small bowel and irritability and spasticity in the colon. They noted that many case reports contained no bacteriologic or pathologic studies to substantiate the diagnosis. Some were based on roentgenologic findings and others were based on the gross appearance of the abdominal organs at operation. These authors noted that the incidence of primary intestinal tuberculosis is high in the British Isles and continental Europe where the pasteurization of milk is uncommon. The bovine type predominated in patients on whom bacteriologic studies were done. Crohn and Yarnis (3) also surveyed the literature and found few case reports. Many of these reported cases also failed to show confirmatory laboratory procedures. They concluded that in none of the cases reported as primary intestinal tuberculosis was the diagnosis convincingly proved.

The following case report emphasizes clinical course, roentgenologic appearance, and the findings at laparotomy. A description of the gross and microscopic findings together with results of guinea pig inoculation is included.

CASE REPORT

A 37-year-old male veteran of mixed Irish and Latin-American descent was admitted to this hospital in August 1949 because of severe episodes of abdominal cramps and extreme weakness. His present illness

(1) Brooke Army Hospital, Fort Sam Houston, Tex.

(2) Bockus, H. L.; Tumen, H.; and Kornblum, K.: Diffuse primary tuberculous enterocolitis; report of 2 cases. Ann. Int. Med. 13: 1461-1482, Feb. 1940.

(3) Crohn, B. B., and Yarnis, H.: Primary ileocecal tuberculosis. New York State J. Med. 40: 158-166, Feb. 1, 1940.

was thought to date back to an episode of abdominal pain which occurred in September 1945 while he was stationed in the Philippines. This attack occurred shortly after a noon meal and he was hospitalized for about 9 days before he was discharged asymptomatic. In the following 12 months he had no attacks of abdominal pain although he was always constipated and used laxatives frequently. In 1947 he had another episode of abdominal pain which resulted in roentgenologic studies of the gastrointestinal tract. He was given no information as to the cause of the pain. In the 6 months preceding admission to this hospital he had frequent attacks of abdominal cramping pain which were more severe following the ingestion of food. The pain was located in his right lower abdominal quadrant and was described as gradually increasing in intensity and then slowly subsiding. A sausage-shaped mass pushing against the right lower anterior abdominal wall could be seen and felt during the height of the attack. Nausea was not a prominent feature and the patient denied an associated rise in temperature. No specific foods could be incriminated and he had progressively lost weight because of failure to eat for fear of precipitating the attacks. His past history was negative for symptoms that might suggest pulmonary tuberculosis and there was no family history of tuberculosis.

Physical examination revealed a poorly nourished man, 70 inches in height, weighing 120 lb. His average weight had been 150 lb. His blood counts were normal; his hemoglobin was 12 grams and his sedimentation rate was 26. His stools were repeatedly negative for ova and parasites. Bromsulfalein liver function test and alkaline phosphatase were normal. The tuberculin skin test was 1 plus at the end of 48 hours. Repeated roentgenograms of the chest were negative. A barium enema revealed the lumen of the bowel to be constricted in the region of the splenic flexure with inability adequately to force barium through the constricted region. A second barium enema showed constricting lesions at the splenic and hepatic flexures with narrowing and spasticity of the ascending colon (figs. 1 and 2). The roentgenologist interpreted these findings as compatible with multiple lesions of the colon which were inflammatory in type.

Although atropine diminished the severity of the attacks, complete relief was not afforded. On 26 October 1949 an exploratory laparotomy was performed. The liver was found to be adherent to the diaphragm by numerous adhesions and palpation disclosed what were believed to be metastatic tumor nodules ranging from 2 mm. to 1 cm. in diameter studding the left lobe of the liver. A circular tumor mass about 5 cm. in length was found in the splenic flexure of the colon and the ascending colon was believed to contain a neoplastic tumor. The peritoneal surface, especially in the vicinity of the ascending colon, showed numerous implants of tumor. At a point about 18 inches proximal to the ileocecal valve a side-to-side anastomosis was accomplished between the ileum and sigmoid colon. The intervening bowel was removed.

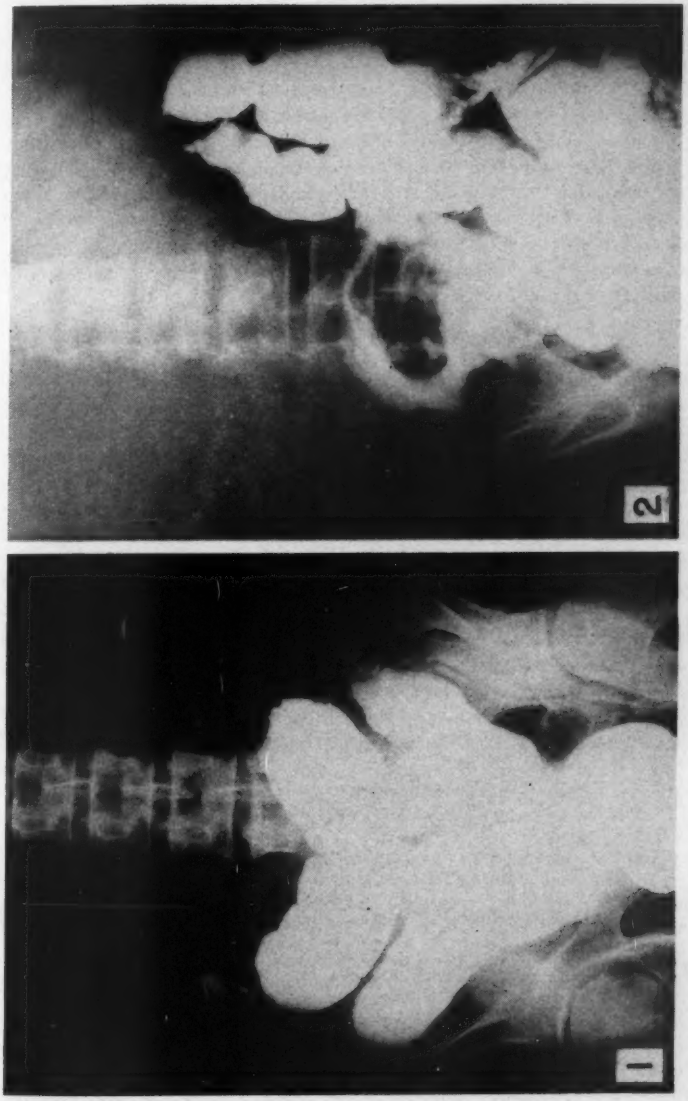

Figure 1. Barium enema showing absence of filling in hepatic and splenic areas. Figure 2. Oblique view demonstrating the diminished caliber of the involved areas.

The specimen was examined and the mucosa in the region of the masses previously noted was found to contain irregular polypoid projections. Areas of granulation tissue were noted and there were 2 areas of deep transverse ulceration. One area of constriction was barely large enough to admit the dissecting scissors. The microscopic sections revealed areas of fibrosis with associated edema and chronic inflammatory reaction. The most conspicuous feature was the presence of numerous discrete and conglomerate tubercles composed of epithelial cells, small mononuclear cells, and multinucleated cells of the Langhans type. The tubercles were of the so-called hard variety revealing little or no caseation. Numerous smears and sections stained for acid-fast organisms failed to demonstrate the specific organism. Material was placed in culture media and *Mycobacterium tuberculosis* was grown. The organisms were inoculated into a guinea pig and subsequently recovered from the animal.

SUMMARY

A patient with primary tuberculosis of the intestinal tract was seen. An outstanding feature of the clinical course was the absence of diarrhea. Successful surgical resection of the involved portion of the gastrointestinal tract was performed and the patient was living and well 2 years following the operation. This case fulfills the criteria for primary tuberculosis of the intestinal tract in that no evidence of involvement of other organs was found and *Mycobacterium tuberculosis* was recovered from the diseased tissue.

CONCLUSION

Primary tuberculosis of the bowel must be kept in mind in patients with abdominal complaints whose diagnosis is difficult. It may closely resemble regional enteritis both in its clinical and roentgenologic findings. This case illustrates the pitfalls in making a pathologic diagnosis by gross inspection.

BOOKS RECEIVED

Preventive Medicine and Public Health, by *Wilson G. Smillie,* A. B., M. D., D. P. H., Sc. D. (Hon.), Professor of Public Health and Preventive Medicine, Cornell University Medical College, New York, N. Y. 2d edition. 603 pages; illustrated. The Macmillan Co., New York, N. Y., publishers, 1952. Price $7.50.

Handwriting, A Personality Projection, by *Frank Victor,* Ph. D., American Lecture Series, Publication Number 96, A Monograph in American Lectures in Psychology. 149 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $3.75.

Hemangioblastoma of the Central Nervous System[1]

Charles E. Buck, *Captain, MC, U. S. A. (2)*

Arthur Steer, *Lieutenant Colonel, MC, U. S. A.*

THE story of hemangioblastoma of the central nervous system is a striking example of medical progress during the last century. In 1872 Jackson *(3)* reported a patient with cerebellar cyst associated with an angiomatous mural tumor. This patient presented many of the clinical and pathologic features now recognized as typical of hemangioblastomas. In 1926 Lindau *(4)* pointed out the relationship of hemangioblastoma of the central nervous system to angiomatosis retinae and noted the common association of these lesions with multiple cysts of the pancreas and kidneys as well as the less frequent concurrence of adenomas of the kidneys and adrenal glands. Further observations *(5)* established that about 20 percent of the cases of hemangioblastoma were familial and that the clinical symptoms of the lesion appeared almost exclusively in adults. It has been largely on the basis of these clinicopathologic observations that a correct preoperative diagnosis has been made with increasing frequency. Familiarity with the lesion has made it easily recognizable at the time of operation. The story is climaxed by the recent reports of neurosurgeons *(6, 7)* who have successfully treated and cured most of the patients they have encountered.

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(1) From the Pathology Department, 406th Medical General Laboratory.

(2) Now at Indiana University Medical Center, Indianapolis, Ind.

(3) Jackson, J. H.: Series of cases illustrative of cerebral pathology; cases of intracranial tumour. Med. Times & Gaz., London. 2: 541-542, 568-569, 1872.

(4) Lindau, A.: Studien uber Kleinhirncysten; Bau, Pathogenese und Beziehungen zur Angiomatosis Retinae. Acta path. et microbiol. Scandinav. (Supp. No. 1) pp. 1-128, 1926.

(5) Lindau, A.; Sargent, P.; and Collins, E. T.: Discussion on vascular tumours of brain and spinal cord. Proc. Roy. Soc. Med. (Sect. Neurol. and Sect. Ophth.) 24: 1-26, Jan. 1931.

(6) Dandy, W. E.: Venous abnormalities and angiomas of brain. Arch. Surg. 17: 715-793, Nov. 1928.

(7) Perlmutter, I.; Horrax, G.; and Poppen, J. L.: Cystic hemangioblastomas of cerebellum; end results in 25 verified cases. Surg., Gynec & Obst. 91: 89-99, July 1950.

The two cases herein reported were found among autopsies performed in the Far East Command and studied at this laboratory during the first 8 months of the Korean conflict.

CASE REPORTS

Case 1. On 2 December 1950 a 31-year-old man was admitted to an Air Force dispensary at Kimpo Air Force Base, Korea, complaining of a continuous occipitofrontal headache of 5 days' duration. He also complained of chills and fever. Records of the course of his illness and the therapy he received during the ensuing 5 days were not available when he arrived at a station hospital in Japan on 7 December. He reported that he had received penicillin. At the station hospital he stated that his headache was accompanied by nausea and that solid foods seemed to stick in his throat. Up to that time, he had been able to swallow liquids without difficulty.

Physical examination on 7 December revealed that the patient was dyspneic and moderately cyanotic. His pharynx was injected and contained a large quantity of mucus which he could expectorate only with great effort. He had a slight nuchal rigidity. An ophthalmoscopic examination was not recorded. His respiratory movements were equal bilaterally, but were rapid and shallow. His chest was tympanitic. Many moist rales and rhonchi were heard throughout both lungs. His pulse was 120. All deep reflexes were slightly hypoactive and equal bilaterally. His motor function was intact except for apparent paralysis of the pharyngeal muscles. His sensorium was clear but he tended to lapse into a semiconscious state when not actively stimulated or questioned.

He was given penicillin, fluids intravenously, a 500 cc. transfusion of whole blood, and oxygen therapy. Because his pulmonary findings increased in severity on this treatment, streptomycin and aureomycin were given. His oral intake was restricted to small sips of water and these precipitated paroxysms of coughing. On 8 December his color and general condition seemed to be improved. A lumbar puncture was performed because the headache and nuchal rigidity persisted. The spinal fluid was clear and was under an opening pressure of 230 mm. of water. The Queckenstedt test was normal. On 9 December the patient suddenly became cyanotic and lapsed into a state of unconsciousness. He responded temporarily after receiving nikethamide intravenously but he died on 10 December.

Laboratory studies. On 3 December the leukocyte count was 19,600 with 91 percent neutrophils, 7 percent lymphocytes, and 2 percent monocytes. On 7 December the leukocyte count was 14,700 with 74 percent segmented neutrophils, 20 percent band cells, 4 percent lymphocytes, and 2 percent monocytes. The urine contained 1 plus albumin, a few leukocytes, an occasional erythrocyte, and an occasional granular cast. The serum chlorides were 462 mg. per 100 cc. The CO_2 combining power was 69 volumes per 100 cc. The spinal fluid taken on 8 December

contained 71 mg. of sugar per 100 cc., and 659 mg. of chlorides per 100 cc. The colloidal gold curve was 4200000000. The cold agglutinin titer was 1:16. Sputum culture was positive for *Hemophilus influenzae*, a nonhemolytic streptococcus, and *Staphylococcus albus*.

A clinical diagnosis of pneumonia and possible poliomyelitis was made.

Autopsy findings. There were patchy filmy adhesions over the right costal pleura and extensive fibrinous adhesions over the left costal pleura and pleura of the interlobar fissure. The peribronchial and

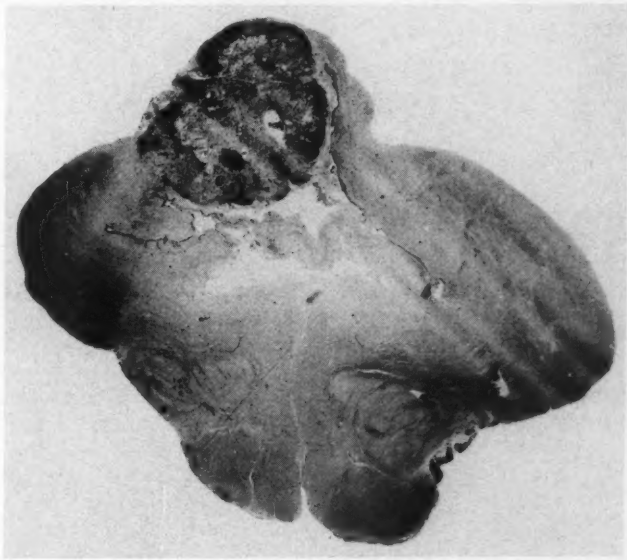

Figure 1 (case 1). Cross section of the medulla showing the tumor and the associated cyst.

paratracheal lymph nodes were greatly enlarged, soft, and discrete. A thick, tenacious, mucopurulent exudate filled the trachea and major bronchi. Both lungs contained many firm, noncrepitant areas which on section were seen to be patchy, elevated, sharply demarcated, and light gray.

There was slight flattening of the cerebral convolutions and minimal cerebellar coning. A moderate symmetrical enlargement of the medulla oblongata was present. An olive-shaped, sharply circumscribed tumor, 1.5 by 1 by 0.9 cm. was found in the dorsal aspect of the medulla extending to the caudal tip of the fourth ventricle and to the left of the midline (fig. 1). It was dark brown with scattered, small, ill-defined, light-yellow areas. The ventral aspect of the tumor projected into a

partially collapsed, irregular cystic cavity which extended cephalad into the fourth ventricle and ran caudally through the dorsum of the medulla into the upper cervical portion of the spinal cord. There was no communication between the cyst and the fourth ventricle. All ventricles were moderately dilated.

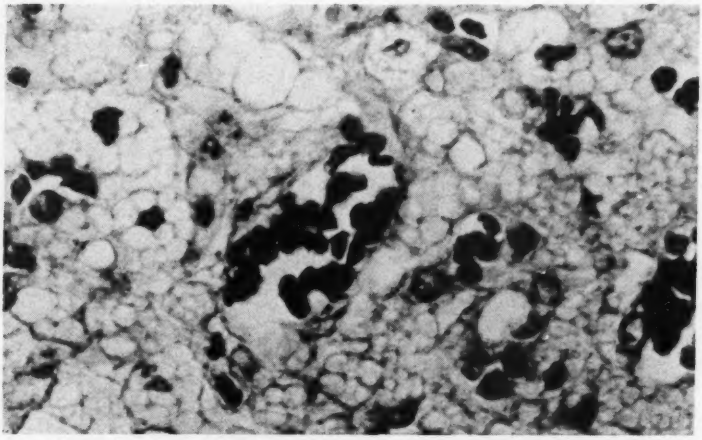

Figure 2 (case 1). Photomicrograph of a highly cellular area of the tumor showing the large pseudoxanthomatous cells.

Microscopic sections of the medulla contained a sharply circumscribed but nonencapsulated angiomatous tumor located subjacent to the pia mater. The cells of the tumor formed numerous blood-filled channels, most of which were of capillary size. A few cavernous vascular spaces were present. Many large endothelial cells having a diameter from 4 to 8 times that of a red blood cell were interspersed between the vascular channels (fig. 2). These cells contained many vacuoles of relatively uniform size separated by delicate, eosinophilic cytoplasmic trabeculas. Thus they resembled xanthomatous cells. The nuclei of these pseudoxanthomatous cells and those of the other endothelial cells were small and had a prominent nuclear membrane and a reticulated chromatin pattern. The nuclei were round, oval, or slightly indented and, in the larger cells, tended to be eccentrically placed. An occasional nucleus was large, unusual in shape, and intensely basophilic. Its uniformly dispersed chromatin suggested degeneration. Several minute areas of cystic degeneration were present. Small deposits of hemosiderin were scattered in the peripheral zone of the tumor. The wall of the associated cyst consisted of a narrow zone of dense glial scar tissue in which there were numerous mature astrocytes. An irregular deposit of fibrin was present on the inner aspect of the cyst wall and numerous globules or irregular strands of deeply eosinophilic protein were scattered in the wall. Similar proteinaceous deposits were found in the tumor itself.

The final diagnoses were (1) hemangioblastoma of the medulla; (2) internal hydrocephalus; and (3) bronchopneumonia, acute and subacute, bilateral, aspiration type.

Case 2. A North Korean prisoner of war was admitted to the 3d Field Hospital on 13 February 1951 complaining of severe continuous headache of 15 days' duration. Questioning revealed that he had had one convulsive seizure in this period. He also had anorexia. Physical examination disclosed a poorly nourished Korean with a temperature of 102.2° F. His conjunctivas were congested. While in the hospital, his temperature rose to 103.6° F. on one occasion. On 15 February nuchal rigidity and an equivocal Kernig's sign were noted. A diagnostic lumbar puncture was attempted but was unsuccessful. Death occurred shortly after the attempted lumbar puncture. A clinical diagnosis of meningitis, cause undetermined, was made.

Autopsy findings. A small accessory spleen in the tail of the pancreas and ascaris infestation of the small intestine were found. The cerebral convolutions were slightly flattened and the sulci were narrowed. There was minimal cerebellar coning. Marked asymmetry of the cerebellar hemispheres was present, the right being about 1.5 times the size of the left. On inserting a needle into the soft and fluctuant right cerebellar hemisphere, a clear, xanthochromic fluid which clotted on standing was obtained. A horizontal section through the cerebellum revealed a large, smooth-walled, unilocular cyst measuring 5.5 by 4.5 by 4 cm. (fig. 3). It occupied about two-thirds of the right hemisphere and extended across the midline displacing the left hemisphere and vermis to the left. There was a sharply circumscribed, moderately firm, dark-

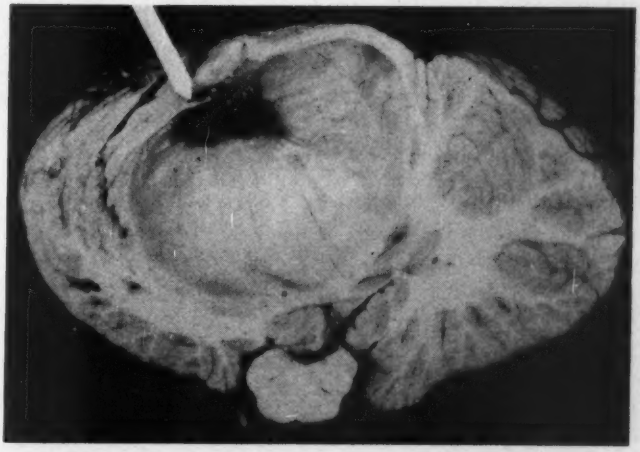

Figure 3 (case 2). Horizontal section of the cerebellum showing the cyst and mural tumor.

brown tumor embedded in the tissue forming the wall of the posteroinferior aspect of the cyst. The tumor had an irregular outline and measured 1.7 by 1 by 0.4 cm. It projected slightly into the lumen of the cyst. Pressure from the cyst caused marked distortion of the roof of the fourth ventricle. Coronal sections of the cerebral hemispheres revealed slight dilatation of the lateral and third ventricles.

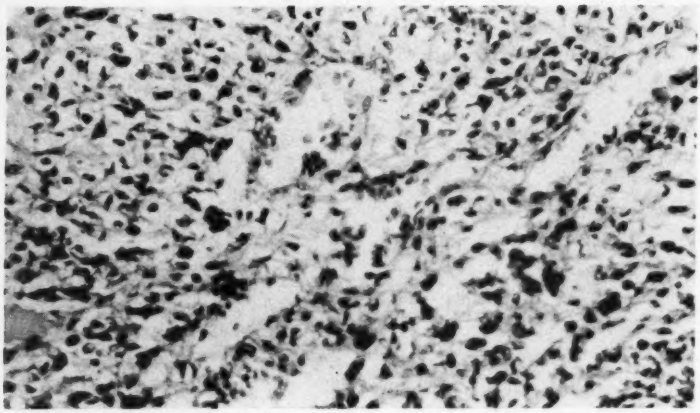

Figure 4 (case 2). Photomicrograph of the tumor showing its vascular character.

The histologic sections revealed that the tumor extended into the cerebellar cortex, was in contact with the overlying pia mater, and was sharply circumscribed but nonencapsulated. It was angiomatous in character, being composed largely of plump endothelial cells which lined or were interspersed between many blood-filled spaces (fig. 4). Most of these vascular channels were capillary in type but a few were cavernous. The endothelial cells tended to be smaller than those seen in the tumor found in the first case and only a few cells had a vacuolated cytoplasm. Fat stains revealed that these scattered vacuoles contained fat. The cell nuclei showed a greater variation in size and shape than those in case 1. They also exhibited a heavier chromatin content, often appearing distinctly hyperchromatic. Perdrau's and Wilder's stains revealed an abundant fine reticulum meshwork supporting the vessels and intervascular endothelial cells. The cyst wall, like that of the first case, was composed of a thin zone of glial scar tissue which contained a large amount of precipitated protein and was lined by an irregular layer of fibrin.

The final diagnoses were (1) hemangioblastoma of the left cerebellar hemisphere, (2) minimal internal hydrocephalus, (3) accessory spleen in the tail of the pancreas, and (4) parasitic infestation with *Ascaris lumbricoides, Trichuris trichiura, Paragonimus westermani,* and hookworm.

DISCUSSION

Hemangioblastomas comprise about 2 percent of all intracranial tumors (7). In the military age group they have accounted for 3.8 percent of intracranial neoplasms (8). The cerebellum is by far the most common site for hemangioblastomas of the central nervous system. They are occasionally found in the medulla or spinal cord and rarely in the cerebral hemispheres (8, 9). In several instances multiple tumors have been found. Lindau (4) pointed out the features of the tumor which indicate its congenital origin from the common anlage of the choroid plexus of the fourth ventricle and the vascular bed of the area postrema of the medulla at the posterior tip of the fourth ventricle. Cushing and Bailey (10, 11) concurred in this concept of the origin of the tumor. They further emphasized that the tumor is a true neoplasm. When found in the medulla, the lesion is located in the area postrema as in the first case reported here.

Of the hemangioblastomas reported in the literature, most, but not all, were associated with a cyst. In the brain stem, the cyst may take the form of a tube extending along the medulla and down into the cervical portion of the spinal cord. In many cases the cyst comprises the bulk of the space-occupying lesion, the tumor being a relatively small nodule partially buried in the cyst wall. In general, the tumors vary from 0.2 to 3 cm. in diameter. Grossly, when viewed at operation they are bright red or yellow and appear sharply circumscribed.

The 2 cases presented in this article illustrate the typical histologic features of hemangioblastomas. The vascular channels may be chiefly of capillary size or may be predominantly cavernous. In most cases there is some admixture of the 2 types of vessels. The number of fat-ladened pseudoxanthomatous cells may be so great as to suggest a hypernephroma, as in the first case, or they may be scarce as in the second case. That these cells are of endothelial origin is readily established histologically by observing the direct transition of the endothelial cells of the capillary bed into the swollen vacuolated intervascular cells (10). The border of the tumor, although nonencapsulated and usually somewhat irregular, is sharply demarcated. Perdrau's stain consistently demonstrates an abundant reticulum surrounding the angiomatous vessels (11). Glial fibers are not found in the tumor (10).

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(8) Bennett, W. A.: Primary intracranial neoplasms in military age group—World War II. Mil. Surgeon 99: 594-652, Nov. 1946.

(9) Turner, O. A., and Kernohan, J. W.: Vascular malformations and vascular tumors involving the spinal cord; pathologic study of 46 cases. Arch. Neurol. & Psychiat. 46: 444-463, Sept. 1941.

(10) Cushing, H., and Bailey, P.: Tumors arising from the Blood Vessels of the Brain. Charles C Thomas, Publisher, Springfield, Ill., 1928. p. 105.

(11) Bailey, P.: Intracranial Tumors. 2d edition. Charles C Thomas, Publisher, Springfield, Ill., 1948. p. 185.

Hemangioblastomas of the central nervous system do not metastasize. The peripherally placed capillary loops occasionally seem to invade the surrounding brain tissue *(11)*. Because the lesion is so frequently located in the posterior cranial fossa where it interferes with the circulation of cerebrospinal fluid, there is often a marked elevation of intracranial pressure. Thus, there is a high mortality rate unless adequate treatment is instituted. The histologic structure of the tumor may vary widely. When the component cells are well differentiated and the intervascular cells contain little or no fat, the tumor has been properly called an hemangioendothelioma *(11)*. Further classification on the basis of morphology has been avoided because the microscopic variations in structure are of minor importance and are frequently demonstrable in different areas of the same tumor.

Some authors *(4, 10)* believe that the cysts so commonly associated with the tumors are formed or elongated by an exudation or transudation of a plasmalike fluid from the tumor. Others *(12)* believe that the cyst originally forms as the result of trauma and rupture of the fragile angiomatous vessels and hematoma formation. The amorphous protein and fibrin deposits found in the cyst wall account for the high protein content of the cystic fluid.

The tumor rarely causes symptoms before the patient is 20 years old. The average age of the patient at the onset of symptoms is about 35 years *(7)*. The clinical findings point to a space-occupying lesion in the posterior cranial fossa resulting in increased intracranial pressure and cerebellar or medullary dysfunction. Early in the course of the disease the symptoms are usually intermittent *(13)*. The presence of angiomatosis retinae or a positive familial history aid in making a preoperative diagnosis. The renal and pancreatic lesions frequently found in cases of hemangioblastoma of the central nervous system are symptomless.

Surgery has provided a highly satisfactory means of treatment. Dandy *(6)* reported that angiomatous cysts are usually among the easiest and safest intracranial lesions to extirpate. He recommended exploration of the cyst and a careful extirpation of the angiomatous mural nodule along with a good margin of surrounding tissue. The remainder of the cyst wall may be left intact. By using this operation on 25 patients with cystic hemangioblastoma of the cerebellum, Perlmutter et al. *(7)* reported 17 entirely well after from 1 to 15 years' observation. Five additional patients were improved. There were 2 operative deaths and 1 patient died subsequent to operation. Radiotherapy has been used when the anatomic site of the tumor has prohibited surgical removal.

(12) Sargent, P., and Greenfield, J. G.: Haemangeiomatous cysts of cerebellum. Brit. J. Surg. 17: 84-101, July 1929.

(13) Craig, W. M.; Wagener, H. P.; and Kernohan, J. W.: Lindau-von Hippel disease; report of 4 cases. Arch. Neurol. & Psychiat. 46: 36-54, July 1941.

The Journal Club

Warner F. Bowers, *Colonel, MC, U. S. A. (1)*

KEEPING abreast of the contemporary literature by a systematic program of reading is essential for interns, residents, and assigned staff alike. One method for instilling this habit is the regularly scheduled journal club which should be a part of every intern and residency training program. It should be a part of the educational program at every hospital, even if no interns or residents are assigned. There are several ways in which such a teaching exercise can be handled and, in order to avoid monotony, it might be well to alternate at intervals between these various methods.

The traditional journal club requires that all available journals be listed and then assigned to the various members of the hospital service, it then becoming the duty of each physician to read his journal or journals regularly, reporting to the group at specified intervals as his name comes up on the rotating roster. Such a meeting usually is held for 1 hour each week at a scheduled time and attendance should be required. If possible, foreign journals should be assigned, not only for their content, but to encourage the reading and speaking of foreign languages, which tends to diminish provincialism. Usually the intern should be assigned only one journal and when he rotates off the service, this same journal is automatically assigned to the new intern. The senior members of the service can well report on 2 or 3 journals if necessary. There are several ways in which the reports can be given, depending on one's viewpoint as to the function of the journal club. In some instances, all articles in a given number of the journal are reported at least by title and author, with brief comments on the less important and with longer discussion on articles of greater appeal. Questions from the group are encouraged. This method is a time saver for the group in that it quickly indicates whether or not that number contains anything which will require reading or sending for a reprint. This method tends to be boring, however, as many articles will be of interest to no one in the group and the process is similar to reading the Index Medicus aloud. A variation is for the reviewer simply to pick out what he considers the best article in that number for presentation in some detail.

(1) Surgical Consultants Division, Office of the Surgeon General, Department of the Army.

Interns and junior members of the department must perforce employ the factual type of review because of their limited experience, but the senior members can enliven their reviews by a more critical analysis, pointing out statements, findings, or concepts with which they are not in agreement and giving their reasons. This adds to the interest. The general experience with meetings of this type over the years has been that they are not very popular and attendance tends to drop unless compulsory. Even with compulsory attendance the interest wanes. Recent discussion with several professors of surgery about the country indicates that this situation is fairly universal.

In an attempt to stimulate interest, some have assigned a specific topic each week and each member then reports on the articles from his journals bearing on this subject. This works fairly well except that articles on unusual subjects will never come to discussion and journals dealing with special fields rarely will carry articles pertinent to the chosen topic. Occasional meetings would have to be arranged to cover these categories in order to assure the desired broad survey of the literature. This type of meeting tends to hold greater interest for the group than the type wherein report is by journal rather than by subject.

Another plan is to assign a special topic to a certain member of the group who then reports on all articles in all available journals for the last 3 months bearing on that subject. This has the value of training the men to review the literature and summarize collected findings in a manner similar to that used in writing an article or thesis except for the time interval covered. Still another scheme is to have each man, whose name appears on the current week's roster, submit in advance to the one who is to conduct the meeting, a list of the articles on which he is prepared to report. The chairman then can pick the articles which fit into any system he has in mind and then at the meeting he can call for those reports. This is a rather successful and stimulating plan.

No matter which method is followed, each member of the department should keep a systematic record, by journal and month, indicating which journals and numbers have been read. Furthermore, it is well to have a definite system by which articles of little interest are read in summary only, articles of greater interest are abstracted on a 5- by 8-inch card with complete reference data, and articles of still greater interest are obtained in reprint form by mailing a post-card request on the spot. Such reprints and abstracts can be filed conveniently in x-ray film boxes and these can be weeded out every time a box becomes overly full or a summarizing paper is written. This type of reprint library is invaluable in preparing the bibliography for an article or in preparing for a lecture or clinic. This matter is somewhat aside from a journal club but emphasizes the importance of systematic and continued reading of current surgical literature.

Reactivity of Cardiolipin Antigens

In Yaws and in a Random Group of Serums

Filomena Innella, B. A. (1)

A COMPARATIVE study of reactions obtained with three antigens employed in serodiagnostic tests for syphilis was undertaken at this laboratory. The study included antigens used in the cardiolipin microflocculation and complement-fixation tests (2,3) in routine use in United States Army Laboratories, and the antigen for the Venereal Disease Research Laboratory (V. D. R. L.) test (4) routinely employed in United States Public Health Service laboratories. The cardiolipin microflocculation serologic test for syphilis was used as a routine test on 13,084 random unselected blood specimens received from United States Army, Navy, and Air Force induction stations, dispensaries, and hospitals, taken from applicants for physical or premarital examinations. No reactions were obtained on 12,810 of these specimens and thus were not studied further. The remaining 274 specimens exhibited some degree of reaction with the cardiolipin microflocculation antigen and were further tested with both the V. D. R. L. antigen and the cardiolipin complement-fixation antigen.

During the course of this study, 375 specimens of blood serum obtained from patients with treated and untreated yaws were received from Haiti for serologic tests for syphilis. All 3 serologic tests were performed on each of the serums in this group. The findings of both studies are shown in tables 1 and 2. The cardiolipin microflocculation test results are used as a basis for comparison with the results of the V. D. R. L. and cardiolipin complement-fixation tests. The United States Army interpretation of numerical reading of reactions was followed for all tests, i. e., 2, 3, and 4 plus reactions were interpreted as

(1) First Army Area Medical Laboratory, New York, N. Y.

(2) News and Comment: Cardiolipin antigens in serodiagnosis of syphilis. Bull. U. S. Army M. Dept. 8: 247-251, Apr. 1948.

(3) War Dept. Technical Manual (TM 8-227), Methods for Laboratory Technicians. Oct. 1946. pp. 440-448.

(4) United States Public Health Service: Manual of Serologic Tests for Syphilis. Supplement No. 22. Government Printing Office, Washington, D. C., 1949. pp. 109-119.

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positive; plus-minus and 1 plus, as *doubtful.* For consistency, the interpretation of *doubtful* was substituted for the usual *weakly positive* reported for the V. D. R. L. test.

Of the group of 274 specimens which exhibited reactions with the cardiolipin microflocculation antigen (table 1), a degree of reactivity with all 3 antigens was obtained on 194 specimens (70.8 percent), the 3 in complete agreement on 139 specimens (50.7 percent), within the range of reactivity, but not in complete agreement on 55 specimens (20.1 percent). No reactions with at least 1 antigen were obtained on 61 specimens (22.3 percent), and 19 (6.9 percent) were anticomplementary.

A comparison of reactions with the 2 flocculation antigens on this group (table 1) reveals reactivity with both antigens on 227 specimens (82.9 percent), the same degree of reaction on 200 (73.0 percent), and varying degrees of reaction on 27 (9.9 percent). Reactions with the cardiolipin microflocculation antigen and none with the V. D. R. L. antigen were obtained on 47 specimens (17.1 percent). Both flocculation antigens exhibited positive reactions on 11 of the 19 anticomplementary specimens. Tests on serial dilutions of the positive sera revealed titers ranging from undiluted to serum dilutions of 1:32.

In the study of the yaws group (table 2), a more uniform antigen reactivity was observed. There were many more positive reactions in this group with the 3 antigens and most of the reactions were strongly positive. Complete agreement in interpretation of the 3 tests was obtained on 322 (85.9 percent) of the 375 specimens; not in agreement in interpretation, but results of the 3 tests within the range of reactivity were obtained on 16 specimens (4.2 percent); not in agreement, and at least 1 test negative on 30 (8.0 percent). Anticomplementary reactions were encountered on 7 specimens (1.9 percent).

A comparison of the results of the 2 flocculation tests on the yaws group (table 2), reveals some reactivity of both antigens on 367 specimens (97.9 percent); low reactivity with the cardiolipin microflocculation antigen and none with the V. D. R. L. antigen on 5 specimens (1.3 percent); low reactivity with the V. D. R. L. antigen and none with cardiolipin microflocculation antigen on 3 specimens (0.8 percent). The prozone phenomenon was encountered in 99 specimens (26.4 percent) with the cardiolipin microflocculation test and in 74 specimens (20 percent) with the V. D. R. L. test. Four of these "prozone" specimens were in the group which exhibited anticomplementary reactions with the cardiolipin complement-fixation test. The microflocculation titers on positive serums ranged from positive in undiluted serum only to positive in serum dilutions of 1:1024.

DISCUSSION

It is not within the scope of this report to evaluate the specificity or the sensitivity of the tests performed because the active or past history of syphilis in either group is not known, but one group of the specimens

TABLE 1. *Comparison of results of cardiolipin microflocculation, V. D. R. L., and cardiolipin complement-fixation tests for syphilis on specimens from random population*

No. of specimens tested with the cardiolipin microflocculation antigen:		13,084	
No. of specimens negative with the cardiolipin microflocculation antigen:		12,810	
No. of specimens reacting with the cardiolipin microflocculation antigen:		274	
No. of specimens positive with the cardiolipin microflocculation test:		145	
Reaction of these 145 specimens with V. D. R. L. test:	Positive: 134	Doubtful: 11	Negative: 0
Reaction of these 145 specimens with cardiolipin complement-fixation test:	Positive: 119	 10	 0
	Doubtful: 3	 1	 0
	Anticomp: 11	 0	 0
	Negative: 1	 0	 0
No. of specimens doubtful with the cardiolipin microflocculation test:		129	
Reaction of these 129 specimens with V. D. R. L. test:	Positive: 16	Doubtful: 66	Negative: 47
Reaction of these 129 specimens with cardiolipin complement-fixation test:	Positive: 12	 28	 3
	Doubtful: 1	 20	 15
	Anticomp: 3	 5	 0
	Negative: 0	 13	 29

TABLE 2. *Comparison of results of cardiolipin microflocculation, V. D. R. L., and cardiolipin complement-fixation tests for syphilis on 375 specimens from patients with yaws*

No. of specimens positive with cardiolipin microflocculation test: 315			
Reaction of these 315 specimens with V. D. R. L. test:	Positive: 310	Doubtful: 5	Negative: 0
Reaction of these 315 specimens with cardiolipin complement-fixation test:	Positive: 299	 4	 0
	Doubtful: 7	 0	 0
	Anticomp: 4	 0	 0
	Negative: 0	 1	 0
No. of specimens doubtful with cardiolipin microflocculation test: 40			
Reaction of these 40 specimens with V. D. R. L. test:	Positive: 2	Doubtful: 33	Negative: 5
Reaction of these 40 specimens with cardiolipin complement-fixation test:	Positive: 1	 4	 0
	Doubtful: 0	 10	 0
	Anticomp: 0	 1	 0
	Negative: 1	 18	 5
No. of specimens negative with cardiolipin microflocculation test: 20			
Reaction of these 20 specimens with V. D. R. L. test:	Positive: 0	Doubtful: 3	Negative: 17
Reaction of these 20 specimens with cardiolipin complement-fixation test:	Positive: 0	 0	 2
	Doubtful: 0	 0	 0
	Anticomp: 0	 0	 2
	Negative: 0	 3	 13

studied was obtained from a random population in which history of any disease is unknown; the other was from patients with yaws which cause the appearance of a positive flocculation or complement-fixation reaction as regularly as does syphilis in serodiagnostic tests (5,6). The three antigens used in this study exhibited a marked correlation of reactivity on the "yaws group" in contrast to the wider divergence of antigen reactivity in the "random specimens." In addition, reactions with all antigens were consistently stronger in the yaws group than in the random group.

CONCLUSION

In this study of antigen reactivity, on a group of serums selected by screening random specimens with the cardiolipin microflocculation test (United States Army), the V. D. R. L. antigen proved less reactive than the cardiolipin microflocculation antigen and the cardiolipin complement-fixation antigen (United States Army) was less reactive than either.

(5) Eagle, H.: Laboratory Diagnosis of Syphilis. The C. V. Mosby Co., St. Louis, Mo., 1937. p. 317.

(6) Falk, M. S.: Problems in syphilis diagnosis and therapy. M. Bull. Hdq. First Army 5: 14-20, Oct. 1950.

BOOK REVIEW

Fractures and Joint Injuries, by *Sir Reginald Watson-Jones,* B. Sc., M. Ch. Orth., F. R. C. S., F. R. A. C. S. (Hon.), F. A. C. S. (Hon.), Orthopaedic Surgeon to His Majesty the King; Director of Orthopaedic and Accident Service, The London Hospital; Senior Surgeon to the Robert Jones and Agnes Hunt Orthopaedic Hospital; Civilian Consultant in Orthopaedic Surgery to the Royal Air Force; President of the British Orthopaedic Association; British Editor of the Journal of Bone and Joint Surgery; Member of Council of the Royal College of Surgeons of England; Chairman of the Joint Committee for Postgraduate Orthopaedic Education; Chairman of the Committee of Management, Institute of Basic Sciences of the University of London and the Royal College of Surgeons of England; Chairman of Medical Committee of the National Advisory Council for Resettlement of the Disabled; Hunterian Professor, Royal College of Surgeons of England; Lecturer in Orthopaedic Surgery and Orthopaedic Pathology, University of Liverpool; Volume I; 4th edition. 455 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., publishers, 1952. Price $22 per set (two volumes).

This book has been completely rewritten and revised. It has been broadened in its scope and many subjects covered in the third edition are now presented in greater detail. Volume I is devoted mainly to the principles of treating fractures. No specific treatment for individual fractures is given in this volume. There is also an excellent section on fatigue, birth, and pathologic fractures.

The author's broad experience makes him well qualified to write a book of this nature. The subject matter is presented simply and concisely and it is profusely illustrated with excellent drawings and roentgenograms. Particular attention is given to the necessity of taking roentgenograms in 2 planes and many pitfalls of diagnosis which can be avoided by adequate films are illustrated. The principles of fracture treatment and the management of the complications of fractures and fracture treatment have been presented in detail. There are new chapters on wound shock, the treatment of open fractures and joint wounds, and the transplantation of bone. These chapters, as well as those dealing with vascular and nerve injuries, would be of great value to the young surgeon faced with the necessity of treating civilian or military war casualties. Throughout the book the author has concisely presented his own indications for, and methods of, management of injuries of the musculoskeletal system. In instances where these opinions are not universally accepted, he has given the reason for his opinions and has briefly presented the opposing viewpoints. He stresses the importance of continuous, adequate fixation in treating fractures, but does not accept the almost universal belief that contact compression, lag screws, slotted plates, compression clamps, and early weight bearing promote the union of fractures.

The chapter on pathologic fractures includes a review of bone diseases that covers almost the whole field of orthopedic surgery. This chapter is exceptionally well written. Each disease is presented by giving the diagnostic clinical, x-ray, and laboratory findings. A short discussion of treatment and prognosis is also given.

This volume will be of greatest value to the student and orthopedic resident. It will also be of great value to younger and less experienced surgeons as a dependable, authoritative guide to the present-day principles of treatment and management of fractures and joint injuries. It should be included in every medical reference library.

—*Commander M. A. Canon, MC, U. S. N.*

BOOK RECEIVED

Medical Disorders of the Locomotor System, including the Rheumatic Diseases, by *Ernest Fletcher,* M. A., M. D. (Cantab.), M. R. C. P., Physician-in Charge of the Department of Rheumatism and Lecturer on the Rheumatic Diseases, Royal Free Hospital; Approved University Teacher, University of London; Physician to the Arthur Stanley Institute, Middlesex Hospital; Consulting Physician to Queen Mary's Hospital for the East End; Heberden Medallist and Lecturer in Rheumatism; Member of the Scientific Advisory Committee, Empire Rheumatism Council; late Physician-in-Charge of a Medical Division, Emergency Medical Service, Ministry of Health; Consulting Physician to the Kent County Council. 2d edition. 884 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., publishers, 1951. Price $11.

A Philosophy of Intern Training in the Army

Warner F. Bowers, *Colonel, MC, U. S. A. (1)*

WHAT is the purpose of the Army internship and what should the young physician expect from it? From the military standpoint, the internship is a period during which the young physician can gain firsthand information concerning the Army Medical Service and he with his wife can decide whether the Army offers a suitable and personally satisfying opportunity for a medical career. This appraisal is a mutual matter because seasoned Army physicians at the same time are evaluating the intern to decide whether his contribution to the service will be sufficient to warrant his selection to become a permanent member of the group. Too often this latter point is overlooked by the intern who is more concerned with what he can get out of the Army than with the possible contribution he may make. From the educational standpoint the internship should train the young graduate to begin general practice or should lay a firm foundation for further study and specialization. To a lesser extent it should crystallize his plans for the future either in the service or out because he usually decides on the type of practice in which he wishes to engage as a result of his contact with older men.

There can be little doubt that a 1-year internship is sufficient in these days when most physicians go on to residency training and especially when emphasis in the third and fourth years of the medical curriculum is being placed on clinical clerkships. A 2-year internship is apt to produce inadequately trained men who are satisfied to stop at that point or, if further specialty training is taken, this second year is essentially wasted unless it can count as an assistant residency. A rotating internship is superior to any other type because most medical educators agree that a current widespread evil is too early specialization without a sufficiently broad background in various fields. Were it not for the time factor, 2 or 3 years of general practice or an equal period of broad training would be highly desirable before focusing on a special field. In the Army, specifically, it would be advantageous to all concerned if the

(1) Surgical Consultants Division, Office of the Surgeon General, Department of the Army.

young medical officer could serve a 2-year tour of general duty before entering residency training. One advantage of military service is that the intern and young medical officer are not plagued by financial difficulties during this trying period. The complaint that such a program would delay board certification by 2 years is not realistic because in most civilian institutions there are so many trainees in the programs that candidates are farmed out to experimental laboratories, basic sciences, or additional clinical rotations so that usually 5 or 6 years are consumed in achieving their goal.

The internship should be a real educational experience and is essentially a period of clinical responsibility designed to complete the type of training begun as a clinical clerk. There is no place in the internship for didactic courses in anatomy or other basic sciences because interns have recently completed this type of study and need clinical experience. Intensive review of basic sciences is properly a function of the residency training although interns, residents, and staff alike should be trained to see automatically the basic science implications in every patient. The treating of basic sciences as a watertight 6-month compartment is pedagogically unsound and professionally immature. Every case discussion should include the "how" and "why" as well as the various types of therapy together with their rationale.

The professional experience during the internship should include mental and manual familiarity with all of the concepts and procedures, including the simpler so-called minor surgery, needed by the general practitioner. All professional experience should be under supervision until suitable proficiency is attained and interns in general should not be trained in the operative technics of major surgery. The young physician sometimes is not hampered by a realization of his own limitations and may tend to gain experience at the expense of the patient's welfare. To prevent this is the function of proper supervision. Medical students sometimes favor an internship where the novice is allowed free rein, forgetting that repetition of faulty practice is not experience. It sometimes is stated that interns get but the crumbs from the feast set for the residents. This in a sense is true and is not undesirable. If the intern is afforded the opportunity to attend all the teaching meetings in the residency program, is stimulated to read the current literature, scrub on the cases assigned to him, and do all the procedures of which he is capable, these crumbs will be found to be highly nourishing fare.

Although a rotating internship should cover enough general fields to insure a broad background of knowledge and experience, it is folly to attempt so rapid a rotation that no real competence is attained in anything. It seems probable that if surgery, medicine, obstetrics and gynecology, and psychiatry are covered in some detail, the other special fields will take care of themselves in due time. Certainly the intern should not be employed as slave labor to perform routine laboratory work, take x-ray films, "watch" patients under spinal anesthesia, or perform other routine chores which have no educational value.

The specific content of the internship should embrace the following general duties: (1) the recording of a detailed history and physical examination in the chart for each assigned patient and familiarity with subsequent plans for treatment, progress of the case, laboratory reports, et cetera; (2) responsibility under supervision for the routine management of all assigned cases; (3) attending all organized rounds, conferences, seminars, and staff meetings and participation as indicated; (4) accompanying the staff on all consultations and acting as a scribe; (5) attending as many autopsies as possible, especially those on his assigned patients; (6) maintenance of a regular library reading schedule and participation in the organized journal club; and (7) preparing and maintaining a daily log of clinical experience, summarized for each rotation and embodying the intern's own original diagnosis checked against the final diagnosis.

There is a definite need for a mature counselor to whom each intern may turn in any matter requiring advice and it sometimes is well to appoint a staff advisor for each intern to act in that capacity throughout the year. In other cases, one advisor for each service through which interns rotate will suffice. In any event, there should be an educational director for the intern program who represents the intern group on the educational committee of the hospital. His specific duties should include: (1) assisting the interns in arranging for residencies; (2) arranging the schedule of intern rotation and electives; (3) acting as general advisor on intern affairs; (4) helping the various department heads to use uniform teaching methods and to employ comparable procedures in education; (5) developing a procedure manual for interns; and (6) keeping a performance record on each intern.

The educational committee for the hospital should decide on all training policies for interns and residents alike and should be composed of the administrative and professional heads of the hospital plus the intern advisor and the director of the whole educational program. Such a committee is essential to a well-correlated and adequate program.

In a large hospital, it must be remembered that interns should be responsible only for the number of active cases that they can adequately manage. This means that not all wards and services will be covered by interns and the designation of wards to be served by interns should be based on the educational needs of the intern rather than the personnel needs of the hospital. In the best university clinics, interns are responsible for about 9 patients each and this ratio rises to about 25 in some of the better hospitals but approaches 35 or more in the poorer internships. Interns should not regard this higher figure as more or better experience because it is possible to be too busy to assimilate knowledge. In the Army, an adequate figure would seem to be about 15 active cases per intern.

Appreciation of these concepts may help interns to see what they are supposed to get out of an internship and may also help the assigned staff to realize their educational responsibilities to the interns who will be the Army physicians of tomorrow.

BOOK REVIEW

A Textbook of Evolution, by *Edward O. Dodson,* Assistant Professor of Zoology, University of Notre Dame. 419 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publishers, 1952.

Despite the great current interest in the study of evolution, there have been few undergraduate texts on this important subject. This book is divided into 5 major sections: Part I, A Definition of Evolution, summarizes the classical treatises on the subject; Part II, Phylogeny, deals with the main lines of evolution in both plant and animal kingdoms, commencing with theories of the origin of life and ending with a discussion of the lineage of man; Part III, The Origin of Variation, deals with the basis of natural selection; Part IV, The Origin of Species, discusses the forces and mechanisms behind the formation of species; and Part V, Retrospect and Prospect, reviews the predictions of some scientists as to what lies before us.

This textbook presents in an interesting and readable style a surprising amount of information which is ordinarily buried in publications beyond the scope of the nonspecialist. It is refreshing to see the author clearly and succinctly discuss the various theories of evolution without stressing his own particular interest. Subjects such as biogeography and taxonomy, too often minimized in modern works, which tend to stress genetics, are shown to contribute much to the study of the phenomenon of evolution. Similarly, the author has avoided the pitfall of overstressing the influence of environment. The illustrations, many of which are original, contribute much toward making the presentation interesting as well as edifying.

Inasmuch as such diseases as leptospirosis, Q fever, and scrub typhus are proving to involve more and more types of mammals, the medical profession's interest in the broad aspects of biology is necessarily increasing. This fine textbook not only serves to review the recent changes in the field, but also emphasizes the interrelationship between the various forms of life.

—Lt. Col. R. Traub, MSC, U. S. A.

A Philosophy of Resident Training in Surgery

Warner F. Bowers, *Colonel, MC, U. S. A.* (1)

THE surgical residency is a progressively graduated educational experience for the attainment of academic and technical proficiency and is strictly a graduate discipline. No other type of experience will produce the caliber of surgeons who are now attracting students from every corner of the civilized world. Three years is the minimum time beyond the internship level in which such training can be assimilated and probably 5 or 6 years should be the maximum because men become too dependent and too institutionalized if a longer time is spent in such a status. Many men who spend several years in postgraduate preparation never go into practice and especially do they avoid smaller centers. The desideratum should be to raise the level of surgical practice in general and this can be accomplished only if surgeons are willing to go to smaller hospitals to practice the specialty for which they have been trained. This situation in the Army has been met by the use of the 3-year program followed by 2 years of supervised practice in a smaller hospital where on his own responsibility the young surgeon operates and sees military surgery at the post level. This is a healthy system and some of its benefits are lost in the 4-year program which should be reserved for outstanding men with teaching and research potentialities.

Unfortunately, there is no known system by which candidates for surgical training can be selected intelligently. Selection usually is based on past records, political, social, or other pressure, and occasionally on merit. Unfortunately also, many men find that they are not surgeons after it is so late that their egos will not accept a change. There are a number of broad generalizations which will assist in proper selection of men to receive specialty training in surgery:

1. A broad cultural and educational background is a basic requirement.

2. A good scholastic record in college and medical school is important, particularly a record which tends to rise toward the end as this may confirm the fact that the student is well oriented and is in the proper field.

(1) Surgical Consultants Division, Office of the Surgeon General, Department of the Army.

3. Genuine ability and real eagemess to acquire medical knowledge. Such a man does not regulate his service by the clock.

4. Completion of an approved rotating internship during which the intern has demonstrated energy, originality, tact, self-control, and better-than-average mental capacity.

5. Real interest in surgery and promise of making a worth-while contribution to its advancement.

6. Willingness to make personal sacrifice to acquire a well-rounded training.

7. Clearly demonstrated interest in the patient as a person and not simply as another case.

8. Integrity, strength of character, and a discriminating sense of ethical values.

9. A certain degree of manual dexterity and precision. Although it is possible for a left-handed person to become a surgeon, it is a great handicap and a trial to those who try to team with him.

It usually is conceded that too early specialization is not desirable but little can be done about it as long as professors of surgery insist on taking their assistant residents from those who are completing a straight surgical internship. Probably a period of 2 or 3 years in general practice would be beneficial but family, social, and economic obligations established during this period of practice usually preclude acceptance of a 3-year residency. In the Army, however, a 2-year general duty assignment after the internship is feasible and may be desirable. The surgical resident should begin training before increasing age and fixed habits interfere with his acceptance of graduate-type discipline.

The question of how many residents an institution should accept for training is important. If a columnar system is used, the institution accepts only the number which permits all candidates to progress through the position of senior residency. Proponents of this system believe that it is unfair to eliminate residents after 1 or 2 years of training because these men cannot find appointments to complete their training and, therefore, tend to practice their specialty partially trained and uncertified. In spite of this it is better to eliminate unfit prospects as early as possible and to control the practice of such men by restricting hospital staff appointments to qualified men. No one in his right mind can condone the continuance of training of unfit men who then inflict themselves on patients who are in no position to judge what they are getting. Furthermore, this columnar system eliminates the element of competition which is a healthy pioneer attitude, substituting the new concept of security for everyone which is a concept leading to or resulting from moral decadence. Finally, because the number of senior residents at any hospital is limited to 2 or 3, the columnar system would

limit the assistant residents to that number. Because the hospital might require 8 or 9 ward officers, the columnar system results in a situation wherein some ward officers are getting residency credit and others doing the same work and attending the same conferences are denied such credit. This situation destroys morale and harmony on a service. The pyramidal system is the only sound one in surgery, with the number of residents in the various levels geared to the patient load and teaching potential. Because only 1 man can remove the gallbladder but 10 men may profit by listening to a heart, it follows that while the pyramidal system is essential on surgery, it may be less essential in other fields although the principle of competition is good on any service. In the Army there is the knotty problem of what to do with the men who are eliminated from the surgical program without being selected for completion. Because these men are still in the Army they must be assigned, but because our prime interest is in the welfare of the patient, such men should be assigned in some other career field. Our greatest efforts at development should be expended on the best men rather than on those who have failed one or more times. The patient deserves care at the hands of first-class surgeons, not repeaters. This is one place where an unyielding attitude is almost mandatory.

The emphasis in residency training should be placed on research so that residents can be urged to make contributions toward the advancement of surgery. One way in which this can be done is to require each resident to undertake a clinical problem arising from the review and analysis of a series of cases. Such analyses usually reveal many dark corners of our knowledge and lead to productive research projects. An alternative method is to have each resident review the literature on a given subject and select a problem which comes into focus in this manner. Finally, residents should stress the importance of basic science applications to clinical work and each should select a basic science as his field of minor interest. A research problem in this minor field often can be found. Such research work may be purely clinical, used for paper presentation or it may serve as thesis material for an advanced degree if there is affiliation with a graduate school. The real importance of such work is in the development of an investigative turn of mind with acquisition of some facility in the methods of research and analysis of results.

Of prime importance in the surgical residency is the philosophy of graded responsibility. Each man should be given clinical and teaching responsibility as rapidly as his development of capacity will permit. This concept is recognized by the American Board of Surgery and is stressed in their requirements.

The duties of the assistant resident include: (1) supervision of the intern's work and checking his history and clinical record in every case for accuracy and completeness; (2) routine management of all assigned patients including operative care in selected cases with supervision as

needed; (3) attendance at and participation in all organized rounds, scheduled conferences, journal clubs, seminars, necropsies, and staff meetings; (4) such interservice consultations as are delegated to him by the senior resident; (5) writing summary letters to referring physicians or hospitals; (6) maintenance of a regular library reading schedule and establishment of a personal reprint library; (7) responsibility for organizing certain conferences and staff meetings; (8) responsibility for specific outpatient clinics; and (9) definite teaching assignments in courses for enlisted technicians, nurse's aides, gray ladies, and similar groups.

The second-year resident has similar duties except that he is expected to assume greater responsibility and to supervise first-year residents in addition to interns. The resident is given greater operative opportunities as his ability increases. He may be assigned on the same section of the service or may rotate through other sections.

The third-year or senior resident should be sufficiently well grounded and mature to accept responsibility for major operations with supervision at first. He should have increased teaching responsibility with supervision of residents, assistant residents, and interns. For at least 4 and preferably 6 months of this third year he should act as "the" senior, in which assignment he has great authority in the mechanics of running the service with the chief of service. He should arrange the operative schedules, supervise all consultations, see that all conferences and teaching exercises are properly prepared, and otherwise take over the administration of the service in preparation for assignment as chief of surgical service in a smaller hospital. He should be allowed to round out his operative experience in any deficient areas and should take on cases of increasing difficulty and risk.

In certain residency programs an outstanding man should be chosen once a year for a 12-month assignment as chief resident. This should be a man who gives unusual promise in research and teaching. He should carry a heavy teaching load with responsibility for the programs of most of the teaching meetings and conferences. He should assist the younger men with their research and with their operative experience. He should act as assistant chief of service and under no circumstances should this fourth year be used as two 6-month rotations as senior resident on uncovered sections or services. This brings up the question of proper rotation during the 3-year program.

The 3-year residency program is looked on by some as an opportunity to expose a man to 6 surgical specialties for 6 months each whereas as a matter of fact it is not necessary for each man to rotate through every conceivable specialty. The desideratum should be so thoroughly to ground a man in surgical principles that he will react and think intelligently through any situation which may subsequently arise. It is not expected that he will be exposed to every possible situation nor that he will perform or even see one of every type of operation during his

training. The unfortunate result of this assembly-line type of training is that it produces technicians who learn an operation to go with each diagnosis. In at least one large university center, there is no set rotation nor any definite time period on any service. Rotation and progression are arranged by the chief entirely on the basis of demonstrated ability of the resident. From this center no 2 men ever have had exactly the same rotation and experience. The rotation need not be quite this random and it is suggested that sometime during the 3 years the man should serve 6 months on general surgery and later 6 months on orthopedics where he should concentrate on the treatment of fractures and such prevalent conditions as foot and postural disorders plus the elements of physical medicine. There are a number of specialties in which a 4-month rotation in anesthesiology, gynecology, plastic surgery, urology, surgical pathology, neurosurgery, and thoracic surgery should be sufficient for practical purposes. The second of the 3 years might be made up of additional general surgery with more responsibility, or it might be profitably devoted to any 3 of the first 5 specialties mentioned above. For the third year a good suggestion might be additional general surgery or rotations through neurosurgery and thoracic surgery with one 4-month period as the senior resident. This would give at least 10 months of general surgery plus several rotations and a period as senior resident with plenty of latitude for individual preference. The chief resident or fourth-year man should not rotate but might select operative patients from various surgical sections to round out his experience. This brings up the matter of who has the choice of patients. The chief of service and assistant chief probably will have special interests in operations of greater magnitude than the residents can handle and will be called on in special instances to undertake certain routine operations. This latter should be fairly rare and the chief should not perform simple operations that can be well handled by residents. Probably the chief and assistant chief should operate not more than 2 days a week unless it is to assist residents. After the chief and assistant chief, the chief resident should have his choice of operations from all sections but here again he should be generous and should spend a lot of time scrubbing to assist the men with less experience. The chief resident should ordinarily assign operative responsibility to the senior resident having case responsibility and here again the senior should be ready and willing to assist the resident under him. Such a system works well in ordinary circumstances but one selfish chief can upset the system for several years by failing to pass down sufficient cases to his juniors. There is no exact number of major operations which the senior resident must have performed. Often it is possible to have the several surgeons, who have scrubbed, each perform some part of the procedure such as the opening or closing so that all may gain some actual experience from every operation. Each should keep a diary claiming operative experience or assistance as the case indicates.

Nothing has been said here with reference to outpatient responsibility because this was covered in a separate article, but each man on the

surgical service, including the chief and assistant chief, should have outpatient clinic responsibility on specific days of the week. This provides an opportunity for the patients to be seen before and after operation by the same physician who has operative responsibility in the hospital. This is of great teaching value and assures that the outpatient clinic is covered by men who are interested in and acquainted with the patients they are seeing.

If the concepts expressed in this article can be implemented progressively, it is believed that the Army residency program in surgery will continue to increase in prestige and will maintain its place among the best in the country.

BOOK REVIEW

Shock Treatments, Psychosurgery, and Other Somatic Treatments in Psychiatry, by *Lothar B. Kalinowsky,* M. D., Research Associate in Psychiatry, College of Physicians and Surgeons, Columbia University, and New York State Psychiatric Institute and Hospital; Associate Attending Neurologist, Neurological Institute of New York, and *Paul H. Hoch,* M. D., Principal Research Scientist (Psychiatry), New York State Psychiatric Institute and Hospital; Assistant Professor, College of Physicians and Surgeons, Columbia University. Foreword by *Nolan D. C. Lewis,* M. D., Professor of Psychiatry, College of Physicians and Surgeons, Columbia University; Director of the New York State Psychiatric Institute and Hospital. 2d revised and enlarged edition. 396 pages. Grune & Stratton, Inc., New York, N. Y., publishers, 1952. Price $8.75.

Those familiar with the first edition (1946) of this book will find this newly revised and expanded edition to be an even more useful and valuable source of information. The authors have taken cognizance of the numerous additions to the methods of somatic treatments in psychiatry and have rewritten much of their material in the light of recent advances. Psychosurgery has been added as indicated in the title. This new section includes a thorough discussion of the authors' experiences, a full review of the literature, and a frank exposition of the authors' conclusions related to controversial issues. Well covered are the various psychosurgical technics; complications; postoperative, physiologic, and psychologic changes; rehabilitation; indications; and results. Sections on insulin, convulsive, and other somatic therapies describe the selection of patients for treatment, technics, complications, and results. The theoretical factors involved in these therapies are discussed. This book is thoroughly annotated and contains an unusually comprehensive bibliography.

Capt. T. P. Rogers, MC, U. S. N.

The Instructional Approach of the Medical Field Service School[1]

Joseph A. Maskel, *Major, MSC, U. S. A.* (2)

THE field of military instruction assumes increasing importance as from day to day the nation is faced with the possibility of mobilization of manpower for defense. An effective fighting force is an informed, well-schooled unit, aware of its capabilities and inspired with the will to win. Military instructors contend that the battlefield has its origin in the classroom and training areas. It is well then that one gain a birds-eye view of adaptations in instructional technics as practiced at this school. From the time of its establishment in 1920 at Carlisle Barracks, Pa., until the present, this school has produced more than 35,000 graduates, many of whom attained places of prominence in military medicine. The school now graduates more than 1,500 officers and enlisted men per month. Receiving a generous sampling of American manpower, supplemented from time to time by representatives from the Allied Nations, the Medical Field Service School serves a heterogeneous student population.

PROBLEMS ENCOUNTERED

From the standpoint of educational achievement, the school instruction deals with all levels, from the high-school level to that of the doctorate degree. Instruction must even go back to the grammar-school level for certain persons who are limited in native endowment and educational opportunities. A major task consequently is the selection of instructors capable of adaptation to the variety of teaching problems encountered. Prime consideration is the ability of the instructor to present his subject in a simple, practical form adapted to the respective audience level. The instructional staff is not only called on to teach their own particular corps in the Medical Service, but to instruct representatives from all of the associated corps of the Military Services, and Reservists, as well.

(1) Presented at the Monthly Medical Meeting, Walter Reed Army Medical Center, Washington, D. C., 17 April 1952.

(2) From the Medical Field Service School, Fort Sam Houston, Tex.

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INSTRUCTOR SELECTION

This school has insisted that the instructor be a teacher, not a mere conveyor of book knowledge, and that his teaching ability be fortified by the mastering of the Army technic, i.e., thorough preparation, simple adequate presentation (including clear explanation and demonstration) and then, whenever possible, audience participation. This is the applicatory phase. This is followed by examination which is not only a test of the student ability to absorb the knowledge which has been presented to him during the preceding periods, but also as a test of the instructor's ability to get his subject over to his class. The critique will be an indispensable revelation of the achievement of both the instructor and the student in this respect.

ADAPTATIONS IN INSTRUCTIONAL TECHNIC

The school seeks to exploit the basic laws governing teaching technics, such as the desire to motivate the student, to capture and hold his attention, and to cultivate his power to retain the various subjects presented. The big job, however, has been to drive home the fact of the reality of the military situation. Ever since the military services were first confronted with the mission of rapid formation of effective fighting groups, the task of transforming the body, mind, and spirit of the average citizen into those of a warrior has existed. This demands convincing and effective instructional methods.

Achievement of realism through use of training aids. We aim to drive home our lessons through the use of training aids. Particularly do we stress the approach through the audiovisual avenues. Whatever training aid is used, it must (1) be easy to make, (2) have a direct bearing on what is to be presented, (3) attract and hold attention, and (4) impress the student. The aids used at this school may for the most part be classified as graphic and pictorial, tridimensional aids, and projected.

The pictorial and graphic aids include posters, charts, and graphic portfolios in which we combine writing, printing, color, and try to impart a bit of motion. A poster should be eye catching. It seeks to recall pertinent facts regarding its subject matter. It should be put in a spot where it will catch the eye of the passer-by and deliver its message rapidly. Its value lies in its simplicity, its power of rapid recall, and the frequency of presentation. In figure 1 the poster on the left is simple and centers the attention on the wound; the poster on the right is confusing, contains too much detail and the wrecked motorcycle is hard to see.

The chart takes advantage of the fact that the observer is a bit more stationary. It is therefore given the mission of imparting knowledge requiring more than passing reflection. It must also conform to the principles we lay down for graphic devices—simplicity, pertinency, and forcefulness as an aid to memory.

Figure 1.

This school maintains a well-organized department of graphic and visual aids, offering to the instructor a consultation service for the solution of the various problems which may confront him in the construction and use of training aids.

In the tridimensional field we have such things as real objects and prepared specimens. Some are so designed that they may be distributed throughout the audience (fig.2). Devices such as these are indispensable in teaching the more difficult subjects. We also have mechanical instructional devices, cut-away models which have been sectioned to display the inner mechanism, small-scale models, and mock-ups (large, practical models).

Projected training aids rank high in instructional value (fig.3). This category includes slides, film strips, and the various reflected materials, such as illustrations from magazines and books. The audiovisual motion picture is superlative in the field of visual aids because motion imparts realism. It has, however, been sadly exploited by the mass of

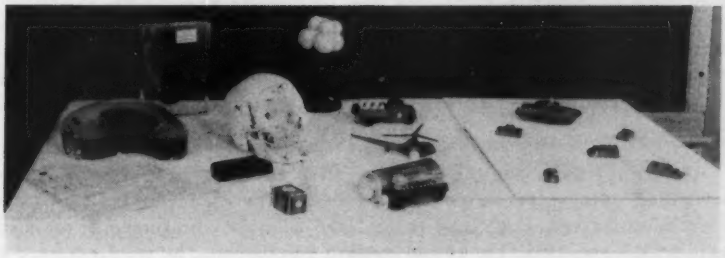

Figure 2.

instructors who have allowed it to supplant their role and have not given requisite attention to the pertinency of the particular film. Regardless of the attractiveness of the film, it must never displace the instructor. The teaching film can achieve its maximum value only if it has been prefaced by introductory remarks of the instructor prior to its showing, and has been followed by an oral summary of the highlights that were presented in that particular presentation.

Figure 3.

One of the devices much in use at the school is the vugraph (fig.4). It consists of a luminous source which projects light through a transparent film on which the various aspects of a subject may be written or drawn. One may, for example, display a chart illustrating the principles underlying effective learning, such as motivation, understanding, and practice. We need not be limited to the skill of the artist, for, employing an ordinary x-ray film any instructor, by the use of ordinary crayons, may write on this transparent film while talking as he would use a blackboard. Map reading can be taught advantageously by means of the vugraph because various overlays may be superimposed on the initial transparency.

SUMMARY

Although I have not presumed to offer anything new, I hope I have increased your appreciation of the fact that by close analysis and discreet combination, much may be realized from the abundance of teaching aids which are available to the modern instructor. The reinforcement of instruction through the appeal to more than one sense is of great value

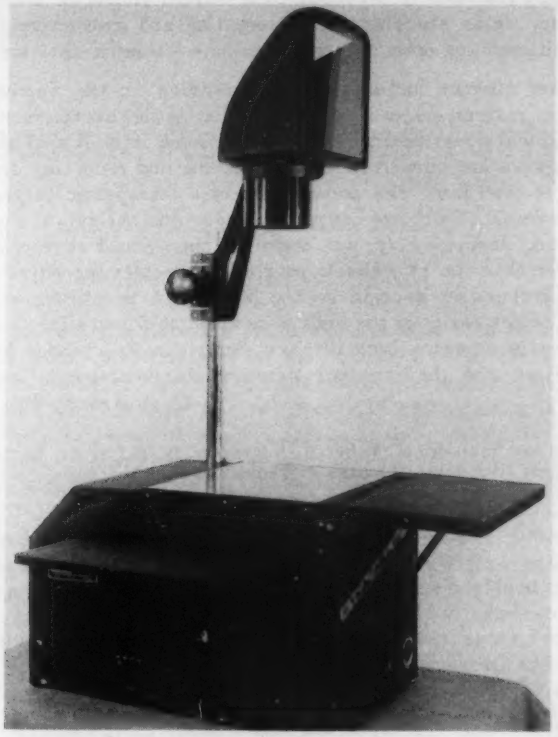

Figure 4.

but there must also be an appeal to the heart. We, as instructors, are obligated to reveal man as he is and to blend his spirit with that of the great host of patriots who have pioneered the foundations of a free and just democratic culture.

BOOK REVIEWS

A Manual for Psychiatric Case Study, by *Karl A. Menninger,* M. D. The Menninger Clinic Monograph Series No. 8. 355 pages; illustrated. Grune & Stratton, New York, N. Y., publisher, 1952. Price $6.75.

This manual is a comprehensive guide for systematic study of psychiatric patients. It incorporates psychoanalytic as well as psychobiologic concepts and represents a dynamic approach consistent with the best in present-day psychiatry. Although prepared to meet the needs of doctors

just entering the field of psychiatry, the manual should be useful to those in ancillary fields and should be interesting and instructive to the general practitioner and other doctors referring psychiatric patients.

The first chapter includes practical advice on the approach to the psychiatric patient, material of great value to the doctor versed only in the mechanical question-answer technic learned in most medical schools. Other chapters are concerned with collecting and recording data and the analysis of this data. The prescription of a therapeutic program is discussed in detail. There are chapters on case summaries and the recording of treatment, developments, and complications. Sound advice is given on the re-referral of the psychiatric patient to his referring physician. There is a comprehensive section on the writing of psychiatric reports and papers. The remainder of the book is devoted to illustrative case records. The appendix contains both the New American Psychiatric Association Nomenclature and the standard Veterans Administration Nomenclature.

—*Lt. Col. O. M. Weaver, MC, U. S. A.*

Refraction and Motility, by *Walter B. Lancaster,* A. B., M. D., D. Sc. Hon. 310 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $7.75.

The author was a great contributor to American ophthalmology until his death at age 88 shortly before this work appeared. The preface outlines the book's aims to improve instruction in refraction and motility by (1) presenting basic optics in a different and simpler way; (2) teaching refined subjective methods of refraction; and (3) showing how to measure and treat motility problems at the time of refraction. The first aim is achieved successfully, the section on basic optics being augmented by well-chosen questions and their answers in the appendix. The atomic origin of light from gamma radiation and the coexistence of mass and energy in the quantum is especially well explained. In the exposition of the other aims, however, only modest enrichment of knowledge and teaching technics results. With most of the illustrations concentrated in the section on basic optics, reliance is elsewhere placed on the descriptive word alone with resulting loss of economy and clarity. Painstaking detail is expended on well-known facts while in some cases concepts meriting greater explanation are touched only lightly.

For readers who desire information on motility, the title is misleading because that subject is restricted to the phorias and then primarily as they relate to the accommodation-convergence linkage. In preparing the student for the steps interweaving motility with refraction, the "ABC of Ocular Motility" is mentioned 4 times, but in the text the heading "A" alone appears and the promise remains unfulfilled. Those activities interested in keeping their reference libraries complete may desire to include a copy of this book.

—*Commander E. J. Olenick, MC, U. S. N.*

Medical Aspects of Tactical Atomic Warfare[1]

Herbert A. Noe, *Major, MSC, U. S. A.* [2]

THE preceding article has presented a general idea of the training aids which are available to the instructors and the appropriate methods of their use. I will indicate the integration of appropriate training aids with the type and scope of instructional material as it is presented to a representative officer class at this school. As indicative of our constant effort, not only to keep abreast of latest developments in the medicomilitary field, but also to anticipate future developments, the topic "Medical Aspects of Tactical Atomic Warfare" seems appropriate. Although this subject is still highly controversial and no one can say with assurance, at this time, what form the final solution will take, a large portion of our thoughts should be devoted to the special problems presented by this new form of warfare.

It is now 6½ years since the initial testing of the atomic bomb at Alamogordo, N. M. In this period, we have seen rather extensive testing of the weapon and the publication of vast quantities of data on the physical characteristics of an atomic explosion, the various phenomena involved, and the subsequent results on structures and personnel. We now may consider that we have a fairly lucid picture of the capabilities of this weapon, at least insofar as its strategic application is concerned. It is only recently, however, that we have begun to realize that the previous acceptance of the atomic weapon as one of final decision when employed exclusively against the economy and the noncombatant elements of a nation's population is in error (fig. 1).

What is the reason for this seemingly abrupt about-face? Basically, there are two primary factors involved. *First,* newly discovered sources of uranium ore and improved production methods for plutonium have materially reduced the cost of atomic weapons. The cost must, however, be considered in two ways, the intrinsic worth and the operational worth. It has recently been estimated that the cost of production of an atomic bomb is about $1,000,000. Operationally, the bomb may be given

(1) Presented at the Monthly Medical Meeting, Walter Reed Army Medical Center, Washington, D. C., 17 April 1952.

(2) From the Medical Field Service School, Fort Sam Houston, Tex.

an entirely different value. Under advantageous circumstances, we may anticipate that one well-placed atomic explosion could render ineffective a division of troops costing about $70,000,000 to activate. Considering the limited stockpile that existed at the close of World War II, and for a period thereafter, it would have been highly uneconomical to use one or more of these bombs in this way. With the material increase in the stockpiling of these weapons which has occurred within the past few years, plus the reduction in cost, it might well be worth while to so employ atomic weapons today.

Figure 1.

Second, recent tests have shown that improved shielding and reflecting materials and the use of a different principle of detonation can result in an effective explosion with a much smaller critical mass than was previously believed possible. This then postulates the possibility of producing smaller missiles, or at least ones having a lower potential energy or smaller radius of effects. This has resulted, in some cases, in the production of more weapons from the same amount of fissionable material and at the same time weapons, such as artillery shells and rockets, which may be used in closer support of ground troops.

It is evident then that now we must begin to think and plan in terms of the tactical employment of this weapon and to determine in what manner we may best integrate its use with that of conventional weapons, in what respects its use, either by friendly or enemy forces, will offer new problems, and ultimately, from a medical viewpoint, in what way the field medical service will be affected.

Any change in the medical service must be predicated on 3 basic assumptions. The *first* of these is change in the tactics of the combat arms. With the acceptance of the tactical use of atomic weapons, land warfare will of necessity change somewhat, both offensively and defensively, to accommodate itself to this new force. Therefore, some modifications will be in order in the tactics and technics of the combat forces. Current thought reflected by the Infantry School and the Command and General Staff College is that this will not revolutionize land warfare, but rather will call for an extension and refinement of presently existing doctrine. The ability to disengage quickly out of immediate close contact with an enemy, an ability to fight effectively in all directions, lighter and more numerous automatic weapons, improved intelligence of the enemy's capabilities and intentions, and a high degree of air and land mobility may necessarily characterize our defense. These, plus an ability to concentrate in a global sense at the time and place of decision, may characterize the attack.

It is axiomatic that the tactics and technics governing the supportive services are but specialized reflections of those of the combat arms. Therefore, if there is no indication that the tactics and technics of the combat forces are to be revolutionized at this time, we may assume that the same will hold true for the supportive services, including the medical. These services must, however, immediately adapt to any improvements in technic indicated by the combat arms. Among such changes in medical technics already discernible are the need for increased mobility without reduction in the present high standard of service and the minimizing of the time between wounding and the initiation of definitive treatment. As for the underlying principles governing medical service and evacuation of the sick and wounded, experience has shown that those currently employed are valid and should continue to serve as a general guide for our service in the future.

The *second* factor influencing medical service is an increased casualty load. For conventional warfare, the tacticians and the medical logisticians have in Field Manual 101-10, a valuable aid for estimating the number of casualties to be anticipated in any given situation, based on past experience. Unfortunately, no such guide exists for estimating the casualties from a tactical atomic attack. Publications which analyze in detail the casualties produced at Hiroshima and Nagasaki are available, but the data contained in them concern attack on built-up areas and cannot be extrapolated directly to fit tactical dispositions in the field.

The types of injury produced by an atomic explosion in troops tactically disposed will be the same as those produced in Japan, namely thermal injury, blast injury, and radiation injury (fig. 2). The relative incidence of the different types of injuries will, however, differ markedly. It is highly probable that in the field, the incidence of burns, particularly those due to flame will be greatly lessened because of the relatively small amounts of flammable material about the area. The in-

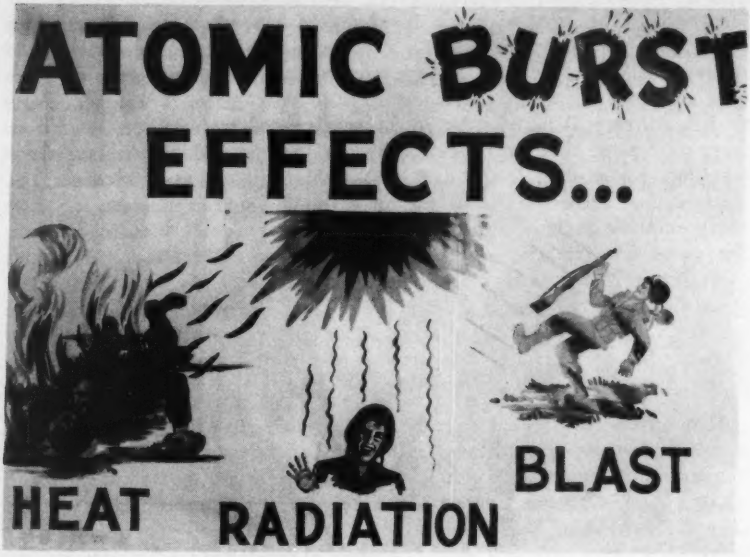

Figure 2.

cidence of mechanical injuries will be decreased because of the relative paucity of structures to contribute flying debris, but these factors may well be offset by an increase in the numbers of casualties produced by the effects of ionizing radiation due to the lack of structures to supply shielding.

Actually, the vulnerability of tactically disposed forces to an atomic attack will vary greatly, as with conventional attack, depending on how much they happen to be protected by terrain features, buildings, trenches, revetments, et cetera, and on how far the troops are from the point of burst.

Another important point to consider is the tremendous difference in population density in the field as compared to cities (fig. 3). As an example, the estimated population density of the destroyed portion of Hiroshima was 35,000 persons per square mile. As contrasted to this figure, troops tactically disposed would average only about 2,000 per square mile. As a result the total number of casualties will be much less in the tactical situation, even disregarding any other considerations.

Any attempt to establish a logical basis for the estimation of tactical casualties must consider the accepted casualty figures from Hiroshima and Nagasaki but must modify these by all conceivable factors which might be peculiar to a field situation. It is evident, then, that until an

actual tactical attack has been made, from which empirical data can be obtained, any figures must be highly theoretical. About the best we may indicate at this point with certainty is that the total number of casualties occurring from tactical atomic attack may be much larger than those anticipated from conventional weapons. This fact makes it impossible to consider the immediate care of casualties as strictly a Medical Service problem. All of the services and arms will be affected in some way. It would be impossible to think of having sufficient medical support concentrated around every possible atomic target because this would require prohibitive numbers of Medical Service personnel. Our national and military philosophy makes it imperative that these casualties be cared for as soon as possible so if it is impossible for the medical personnel on the spot to do the job alone, it naturally follows that their efforts must be supplemented by other troops in the vicinity.

For this reason troops of all units, regardless of branch, must have more intensive training in first aid so that they may function efficiently in the initial phases of an emergency. Furthermore, the optimum degree of mobility must be achieved for the Army Medical Service so as to insure prompt reinforcement of disrupted medical units within the damaged area.

The *third* factor which may introduce change in the medical service is special damage control requirements. The term "damage control"

Figure 3.

relates to the prevention of damage or injury, or if such damage or injury has already occurred, to its confinement and to minimizing its effects. It must, then, necessarily include in its scope all passive measures which may be taken to accomplish these ends and must be equally applicable to any type of attack, conventional or otherwise. As applied to the Army Medical Service, damage control is concerned specifically with the prevention of casualties and damage to medical installations, and minimizing the effects through expeditious evacuation and treatment

Figure 4.

of casualties. In general, the same principles which are applicable for preventing casualty production will also be appropriate for protection of medical installations because the destructive factors involved for both are mainly the same and will, most often, affect simultaneously both personnel and materiel.

It is not anticipated that, ordinarily, medical installations will, of themselves, be considered profitable targets for atomic attack, but there is the ever-present danger that, because of proximity to other military installations, they may become involved incidentally (fig. 4). For this reason, medical installations, in general, should be located at as great a distance from anticipated targets as is consistent with the military situation and the effective functioning of the installation. Most major medical installations could be located at distances greater than the radius of serious effect of atomic weapons and still maintain an effective support role in most situations. This will not be true for units of the divisional medical service which must be located relatively close to their tactical units in order to give rapid and adequate support.

Full advantage must be taken of existing terrain features and man-made structures which may provide a degree of protection from the destructive effects of the weapon. Steep hills, deep ravines, caves, basements, cellars, and trenches may provide almost complete protection from the blast and heat effects of the weapon, and some degree of protection from the ionizing radiations (depending on the distance from the point of detonation). A careful analysis of the area should be made prior to locating any installation, giving particular attention to the location of major units which may be potential targets, the position of terrain features with respect to these units, and the adequacy of road and other transport networks.

In general, for small field units, dispersion of individuals and groups beyond that prescribed by present tactical doctrine for protection against conventional weapons is ineffectual against an atomic explosion. To be effective, the unit would have to be dispersed to the extent that no major portion of it would be within the radius of serious influence of a single explosion. This would require dispersion over an area upward of 1,500,000 square yards and would lead, in many instances, to loss of centralized control and serious decrease in efficacy of operations.

The preparation of foxholes, slit trenches, et cetera, should be practiced routinely for all operating personnel and to whatever extent is practicable for casualties. Also, the protection afforded by "digging-in" of unit structures, such as aid stations, ward tents, et cetera, will more than compensate for the difficulties involved.

BOOK REVIEWS

Air War and Emotional Stress, Psychological Studies of Bombing and Civilian Defense, by *Irving L. Janis*, member The Rand Corporation. 280 pages. McGraw-Hill Book Co., Inc., New York, N. Y., publisher, 1951. Price $5.

This book presents a psychologic analysis of the effects of air bombardment on civilian populations based on various official surveys made during World War II and on both technical and popular writings which were subsequently published. The author is a member of the Department of Psychology, Yale University, and has been engaged in research on this subject for the past 3 years. The volume is divided into 3 parts: reactions at Hiroshima and Nagasaki, effects of air war, and psychologic aspects of civil defense.

Of interest to physicians is the author's statement that air attacks of World War II with conventional bombs produced no serious psychi-

atric disorders except in "markedly predisposed personalities." Though fear was continually present, most people made a satisfactory emotional adjustment to these attacks unless they experienced a "near-miss." Resentment was often as strong against the home country as against the enemy. He concludes that the psychologic vulnerability, of which people in the United States would be aware prior to an atomic bombing by an enemy, could be reduced by research and education for survival. Most of the factual information is drawn from the reports of the United States Strategic Bombing Survey in Europe and Japan. The statement that "the only published case studies of atomic disaster experiences are those in John Hersey's popular book, *Hiroshima,*" however, seems to require some clarification.

Military physicians concerned with civil defense will find this book of interest for a better understanding of mass morale as well as the panic which is certain to accompany an atomic bomb attack. It is well written and contains an ample bibliography of references cited.

—Col. R. J. Benford, U. S. A. F. (MC)

Handbook of Diseases of the Blood, by *A. Piney,* M. D., M. R. C. P., Physician, St. Mary's Hospital, Plaistow; late Director, Pathological Department, Cancer Hospital and Charing Cross Hospital Institute of Pathology, London. 213 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., publishers, 1951.

This handbook for the student and general practitioner is unique in its emphasis on the clinical signs of blood diseases to the exclusion of hematologic technics. The author states that hematology is primarily a "bedside" subject. We are more than adequately supplied with specialized books on examination of the patient's hematopoietic system, but Dr. Piney asserts that the physician-hematologist should also be competent to examine the patient, and his handbook is in reality an unusually complete text on the physical diagnostic methods used and the signs and symptoms exhibited by patients with diseases of the blood. This book is recommended for the general practitioner. Because it does not cover the details of laboratory investigations, it would not be a complete text for the student. In effect, it is an excellent supplement for any course in physical diagnosis, and narrows the gap between the laboratory and the bedside.

The color plates and illustrations are inadequate for teaching purposes, but the didactic discussions are brief and readable thereby assuring more frequent use by those physicians who find their time at a premium. The statement regarding Bence-Jones protein solubility is inaccurate and the author's enthusiasm for parenteral iron therapy may be open to criticism. In general, however, the hematologic data would be approved by contemporary hematologists.

—Maj. J. C. Shrader, U. S. A. F. (MC)

Evaluation of the Rapid Heterophile Antibody Slide Test

Frank J. Glassy, *Captain, MC, U. S. A. (1)*

ALL of the serologic tests devised and now in use in the diagnosis of infectious mononucleosis depend on the demonstration of a heterophile antibody. Antibodies which react with an antigen entirely unrelated phylogenetically to the one which brought about their production are heterophile antibodies. Antigenic substances which are able to stimulate the production of heterophile antibodies are heterophile antigens. The heterophilic reaction of human antibodies with antigens prepared from guinea pig kidney and ox cells is used in the laboratory to differentiate serum disease from infectious mononucleosis.

The purpose of this article is to evaluate a rapid slide test for infectious mononucleosis which can be used as a screening test. A negative slide test eliminates the necessity of using the test-tube method. It is evident that the use of such a test can save time and material, but in order to be useful such a test must be reliable. Such a test, coupled with the tube test, was advocated by Straus *(2)* who used a variety of technics which were based fundamentally on the addition of a 2 percent sheep cell suspension to various concentrations of inactivated serum diluted with saline solution. He stated that by using a rapid slide test and a centrifuged test-tube method the results could be obtained 10 minutes after preparing the serum and making the serum dilutions. Davidsohn et al. *(3)* have recently shortened the time of Davidsohn's differential test. Curreri *(4)* presented a simple technic which we have used to advantage. Only a single serum dilution is made with this method, and it can be read within 1 or 2 minutes after mixing the serum and cells.

(1) Letterman Army Hospital, San Francisco, Calif.

(2) Straus, R.: Simple slide and tube tests for infectious mononucleosis. Am. J. Clin. Path. 6:546-556, Nov. 1936.

(3) Davidsohn, I.; Stern, K.; and Kashiwagi, C.: Differential test for infectious mononucleosis. Am. J. Clin. Path. 21:1101-1113, Dec. 1951.

(4) Curreri, G. A.: Rapid heterophile antibody test. Med. Bull. European Command 8:298-300, June 1951.

METHOD

The rapid slide test used here is the one described by Curreri (4) except for two changes. We use a 50 percent solution of preserved sheep cells and the special slide. We have used his technic as a preliminary to Davidsohn's differential test (5, 6). One hundred concurrent rapid slide tests and Davidsohn's differential tests were performed on the serums of 71 patients. Our purpose was to correlate the findings of

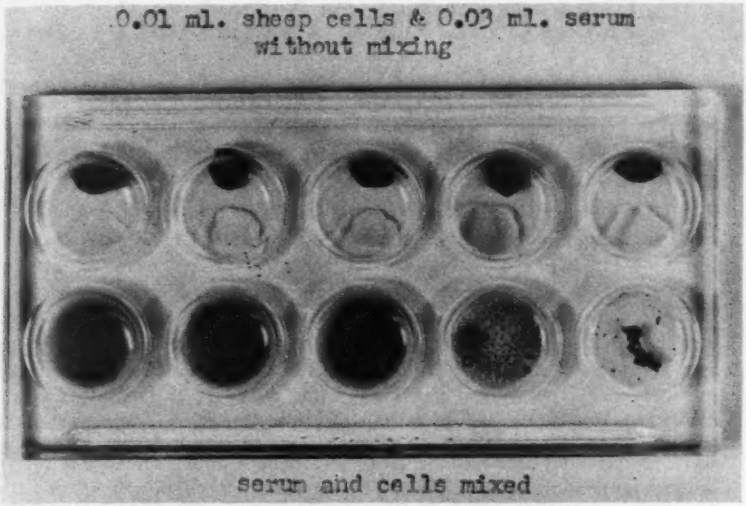

Figure 1. Three negative, one doubtful, and one positive slide tests are shown before and after mixing on the special slide.

the slide test with those of the tube test. It must be kept in mind that false positive results in the slide test may be due to the presence of cold agglutinins or to Forssman's antibodies. The cold agglutinins can be detected by checking the agglutination after setting in an incubator at 37° C. Usually a history noting the absence of injections of horse serum can rule out the presence of serum disease. Each group of tube tests was performed with known positive controls of high titer. Figure 1 shows typical reactions.

RESULTS

A tabulation of the degree of agglutination in the slide tests and of the various titers in the test-tube method are shown in table 1. Of the 100 tube tests performed, 53 were negative and 9 showed titers not considered significant (1:28 or below). These tests had associated negative, 1 plus or 3 plus slide tests. There were 4 "significant" tube titers

(5) Davidsohn, I.: Test for infectious mononucleosis. Am. J. Clin. Path., Tech. Supp. 2: 56-60, Mar. 1938.

(6) Davidsohn, I., and Walker, P. H.: Nature of heterophilic antibodies in infectious mononucleosis. Am. J. Clin. Path. 5: 455-465, Nov. 1935.

TABLE 1. *Analysis of 100 rapid slide tests and differential tests performed on 71 patients*

Slide tests		Titer of differential test									Negative tube tests	Total tests
Recording of slide test	Slide reading	1:14	1:28	1:56	1:112	1:224	1:448	1:896	1:1792	1:3584		
Negative	-	2	3	-	-	-	-	-	-	-	38	43
Doubtful	+	2	-	-	-	-	-	-	-	-	8	10
	++	-	-	-	-	-	-	-	-	-	7	7
Positive	+++	-	2	1	-	1	1	1	-	-	4	10
	++++	-	-	3	1	2	-	7	6	10	1	30
Total											58	100

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of 1:56 which showed a 3 and 4 plus agglutination in the slides and were recorded as positive. Of the 29 "diagnostic" titers, the dilutions were 1:112 and higher and 28 were 1:224 or higher. All of these 29 had associated slide tests with 3 or 4 plus agglutination. Only 1 of the tube tests which was negative showed a 4 plus agglutination in the slide test. These results show that if only the slide tests were used as a screening method many of the tube tests could have been eliminated. Relying on a negative slide test alone, 43 of the tube tests need not have been performed. If, however, only marked agglutination (3 and 4 plus) were relied on in the slide test, 40 "significant" or "diagnostic" tube tests would have been made rather than the full 100. This would eliminate 60 of the tube tests. With a relatively small series, however,

TABLE 2. *Clinical analysis of the slide and tube tests in patients with infectious mononucleosis*

No.	Slide test	Tube titer	La	Lc	Atl	S	H
1	++++	1:112	+	+	+	-	-
2	++++	1:224	+	+	+	-	-
3	++++	1:56	+	+	+	-	-
4	++++	1:896	+	+	+	-	-
5	+++	1:56	+	+	+	-	-
6	++++	1:896	+	+	+	+	-
7	++++	1:1792	+	+	+	+	-
8	+++	1:448	+	+	+	-	-
9	+++	1:3584	+	+	+	+	-
10	++++	1:1792	+	+	+	-	-
11	++++	1:1792	+	+	+	+	+
12	+++	1:896	+	+	+	-	+
Percent positive			100	100	100	33	16

La = Lymphadenopathy Lc = Lymphocytosis
Atl = Atypical lymphocytes S = Splenomegaly
H = Hepatomegaly

it is wiser to rely on any degree of agglutination as a screening method rather than on only a 4 plus reaction. It is better to report results of the slide test as negative, doubtful, and positive rather than to be specific about the exact degree of agglutination because this leads to more errors.

Each of the last 30 slide tests made in conjunction with the tube tests were performed simultaneously on both uninactivated and inactivated serum with identical results. In each test the same degree of sheep cell agglutination was noted with the paired serums. This indicates that inactivation of the serums is not essential in the slide test.

Examination of the clinical data of the patients whose serums had "significant" and "diagnostic" titers showed that there were 12 who satisfied the criteria for the diagnosis of infectious mononucleosis *(7)*. These criteria are: lymphadenopathy, atypical lymphocytes in the peripheral blood, and the presence of heterophile agglutinins absorbed on guinea pig kidney and not on ox cells. Thirty-two rapid slide tests and tube tests were performed on these 12 patients. All of the slide tests on these patients showed a positive reading (3 or 4 plus agglutination) on the slide test with diagnostic tube titers of 1:56 or higher. Two of the 12 (patients 11 and 12) had the clinical findings of infectious hepatitis with jaundice, hepatomegaly, lymphadenopathy, and lymphocytosis with atypical lymphocytes in the peripheral blood. One of these had splenomegaly and the other did not. The high titers on these 2 patients (1:1,792 and 1:896 respectively) are considered too high for true infectious hepatitis *(8)* although ox cells were not used in the differential test tube method. Table 2 shows the other pertinent data in these patients. Several of them had increasing and finally decreasing titers in the 3-month period of this study.

DISCUSSION

Reliability is the most important problem in evaluating a rapid heterophile antibody slide test. It should be the clinician's decision whether the results of this screening test are dependable enough to eliminate a tube test if the slide test shows no agglutination. If the clinician insists that the test-tube method be done, his wish should be granted. Because the titer of heterophile antibodies can change, tests should be repeated to detect a rising titer. This is especially true if the slide test is doubtful or positive. An increasing titer is more significant than a single high titer. Although this series is relatively small, I believe that the findings are significant. Further work on a larger series of patients will aid in properly evaluating the rapid slide test for infectious mononucleosis.

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(7) Goldthwait, D. A., and Eliot, J. W.: Confusing aspects of infectious mononucleosis. Am. J. M. Sc. 221: 264-269, Mar. 1951.

(8) Leibowitz, S.: Heterophile antibody in normal adults and in patients with virus hepatitis. Am. J. Clin. Path. 21: 201-211, Mar. 1951.

SUMMARY

The general principle of the rapid slide test for the detection of heterophile antibodies is the same as that of the more time-consuming tube tests. The slide test can be performed within a few minutes after drawing the blood and preparing the sheep cells. It is reliable as a screening method to aid in ruling out the diagnosis of infectious mononucleosis. The finding of a negative slide test eliminates the necessity of performing about 40 percent of the tube tests. The tube-test method should be performed if the slide reaction is doubtful or positive. Most patients with infectious mononucleosis will have a positive slide test and will show significant or diagnostic titers in the tube tests.

BOOK REVIEW

Early Care of the Seriously Wounded Man, by *Henry K. Beecher,* M. D., Henry I. Dorr Professor of Research in Anesthesia, Harvard University; Chief, Department of Anesthesia, the Massachusetts General Hospital, Boston, Mass.; Formerly Lieutenant Colonel, Medical Corps, Army of the United States, and Consultant in Resuscitation and Anesthesia, Mediterranean Theater of Operations; Consultant to the National Institute of Health; Consultant to the Surgeon General, United States Army. American Lecture Series Publication No. 138, A Monograph in American Lectures in Surgery. 32 pages. Charles C Thomas, Publisher, Springfield, Ill., 1952.

There is a great need for up-to-date coverage of this timely subject. Unfortunately, the author neither covers the subject nor does he always conform to accepted principles currently in use on the fighting front. Many important points are well presented, but nothing new has been added. The dangers of overmedication with morphine is stressed in an excellent manner. Suggestions in the field of anesthesiology are undoubtedly sound, although many qualified anesthesiologists will not agree with all of them. The chapter on field care prior to admission to a hospital is not detailed or clear enough for the beginner and is too elementaty for the initiated. The discussion of the use of the tourniquet is misleading, for it is implied that its use often saves life when actually the tourniquet is rarely indicated. To "apply it as low as possible on a limb" is more harmful than helpful in many instances. Plasma is presented as an efficacious agent for treatment of shock when actually it is of very little value. To dispose of penetrating head wounds in 15 words and yet to find space to discuss morphine in cirrhosis of the liver seems inconsistent. This monograph may be interesting to the anesthesiologist in that it presents one approach to anesthesia for the seriously wounded, but it cannot be enthusiastically endorsed as a good reference for those anticipating duty involving general care of the seriously wounded.—*Commander C. A. Stevenson, MC, U. S. N.*

Alopecia Areata in Husband and Wife

A Psychiatric Case Study

John A. Koltes, *First Lieutenant, MC, A. U. S.* (1)

A HUSBAND and wife who simultaneously developed alopecia areata were referred to a psychiatrist for examination and evaluation after both patients had been examined physically and found to be free of physical disease except for the alopecia. Both the husband and the wife complained of nervousness and both thought that there was some connection between their hair loss and their nervous tension. Neither patient had ever had any psychiatric treatment. The wife had never been treated for any serious physical illness; the husband had been treated for alopecia areata in the past and had been told by a dermatologist that nervousness seemed to be a causative factor in his case.

Alopecia areata is one of the diseases which, in many instances, seems to be correlated or at least to occur simultaneously with some sort of an emotional disturbance. It is common knowledge that severe emotional crises, long-standing anxiety, hysterical attacks, sudden fright, et cetera, are frequently seen as precursors of this disease. Numerous authors report isolated cases in which some emotional trauma precedes the onset of the disease. Rogers (2) reported a patient who lost his hair every time his wife gave birth. McCarthy (3) pointed out that the severest cases of the disease are seen in association with sudden, severe emotional shock. He also noted that many cases are found in people whose lives are characterized by worry and who live under conditions of continual nervous strain.

The specific cause of the disease remains a mystery although many theories have been advanced. McCarthy listed the etiologic theories as trophoneurotic, endocrine, dystrophic, and parasitic in what he be-

(1) U. S. Army Hospital, Fort Eustis, Va.

(2) Rogers, R. B.: Alopecia areata, with particular reference to etiology. J. A. M. A. 93: 919, Sept. 21, 1929.

(3) McCarthy, L.: Diagnosis and Treatment of Diseases of the Hair. C. V. Mosby Co., St. Louis, Mo., 1940. pp. 111-205.

lieved to be the order of importance. Robinson and Tasker (4) believed that most of the older theories were disproved except for that of dysfunction of the nervous system. They reported 2 patients with alopecia areata in association with neurodermatitis. In each of their patients some psychogenic disturbance preceded the alopecia. Many examples can be found in the literature supporting every known theory of the disease. For example, alopecia areata has been reported in association with the menopause, castration, and exophthalmic goiter. Davis (5) is reported to have stated that from 16 to 20 percent of the cases studied occurred in families. This figure was given in support of the parasitic theory of the disease.

CASE REPORTS

Case 1. A 30-year-old sergeant applied to the medical service of this hospital in September 1951 for treatment of episodes of alopecia areata of 5 years' duration. Small areas of alopecia about 1 cm. in diameter had recently appeared in the bearded area. The alopecia had originally started in the mustache area and within 6 months the patient had lost all head and body hair with the exception of a small amount around the ankles. Alopecia universalis remained for about 2 years when the hair started to come back in on the top of the head in the fall of 1948. The hair grew in in its normal distribution and texture although somewhat darker over the period of the ensuing 6 months. Since the spring of 1951, he had had occasional areas of alopecia involving the hair of the face and the pubic area.

He was treated by his local physician and a dermatologist in the early phases of the illness and was told that "nervousness" was probably related to his alopecia. There was nothing in his history suggestive of a severe emotional crisis. His past medical history was negative except for treatment of sebaceous cysts of the shoulder by x-ray when he was 22 years old (2 years prior to the onset of the alopecia).

He was born and reared in Detroit, Mich. The father, an alcoholic, had separated from the family when the patient was very young. The patient spent 3 years in the Navy during World War II. He had been engaged in combat but had not been wounded and had not suffered any striking emotional disturbances. Subsequent to discharge from the Navy in 1945 he returned to his previous employment but shortly thereafter quit this job because of an argument with the supervisor. In the ensuing years he had 12 different jobs, quitting all of them because of dissatisfaction with the job assignment, argument with his superiors, or in an attempt to improve himself. The longest period of employment in one job was 1 year. He was chronically dissatisfied with himself. He was

(4) Robinson, S. S., and Tasker, S. : Alopecia areata associated with neurodermatitis; report of 2 cases with discussion of relationship of alopecia areata to nervous system dysfunction. Urol. & Cutan. Rev. 52: 467-472, Aug. 1948.

(5) Davis, H.: Cited in reference footnote (4).

argumentative, inflexible, and demanding. If a job did not please him or fit into his plans he would quit. He was called to duty in the Army in September 1950 for a period of 2 years. At the time of enlistment in the Reserve Corps in 1949, he was still bald.

His personality was that of an obsessive, ruminative person who is very rigid and only superficially friendly. He was obviously a hostile person who was constantly striving to improve himself in an effort to overcome marked feelings of inferiority. He demanded a great deal of himself and of others. Interestingly enough he planned to retire at about 45 years of age and regress to a stage of complete dependence, planning to do nothing but enjoy himself. In the Army he continually vacillated between getting a good location and making the Army a career or threatening to go AWOL because of dissatisfaction at the moment. He was opinionated and his behavior was ritualistic and compulsive. His sexual life was relatively normal. His interests were varied and multiple but were of short duration and of little intensity. His primary problem psychologically was difficulty in repressing hostile impulses and a need for an obsessive framework in order to control his hostility. He was inclined to be cyclothymic and was either enjoying life tremendously or was depressed.

Case 2. The wife of case 1 was a 29-year-old woman who had been married for 10 years. This was the first marriage for both patients. The marriage was childless for 9 years although no contraceptive devices were used and children were desired. The patient was first seen in September 1951 at which time she had alopecia in the occipital region for 5 weeks. She was an attractive, well-developed, well-nourished, auburn-haired woman who stated that her hair and eyes "are the only things that I have that are attractive." The general physical examination revealed no evidence of any physical abnormality. The hair over the body was very fine and almost invisible. The pubic hair was bright red. The hair on the head was auburn and moderately coarse. There was no history of dye or other foreign substances being applied except for infrequent permanent waves. The patient complained of feelings of inner tension and believed that her alopecia was related to nervousness.

She was born and reared in Detroit, Mich., of Irish parents. Her mother died when she was 6 years old and her father died when she was 17. She was reared by a sister 10 years her senior. She stated that she was her father's favorite child. She was a high school graduate and had a responsible job in a business office for several years. She continued to work after her marriage. Throughout this period she had had recurrent episodes of depression which were particularly marked at the time of her husband's recall to active duty. Anxiety symptoms became sufficiently externalized at that time that she was unable to hold her job. This was a great threat to her security. Interestingly enough, her handwriting became so tremulous that she had to use a typewriter although there was practically no tremor of her hands. Her poor writing bothered her a great

deal because she had previously held her job on her ability to write rapidly and legibly. There was little improvement in her writing over a period of many weeks.

She had had her last menstrual period in the last week of August 1951, about 1 week after the onset of alopecia. Examination several weeks later indicated what appeared to be a normal intrauterine gestation. This was the first time that she had ever been pregnant. Four months after the onset of the alopecia the bald spot was about 6 cm. in diameter. The area was covered with fine, blond, d owny hair about three-fourths of an inch long. There were no other areas of alopecia. Both patients were treated with ultraviolet light in graduated doses 3 or 4 times a week. No topical applications were made.

This woman was deprived of the mother figure at an early age but made a good social adjustment in spite of this. She, too, had a cyclothymic personality with some difficulty controlling hostility. Her alopecia and her pregnancy occurred simultaneously. Whether any more specific relationship between these two entities existed cannot be stated. It is quite possible that pregnancy with its associated endocrine changes was the cause of the alopecia, although it is just as possible that pregnancy at this time was purely coincidental as a causative agent of the disease.

DISCUSSION

These two cases of alopecia areata are presented because of the infrequency of this disease occurring simultaneously in husband and wife and because of the similarity of psychiatric findings in both patients. Much credence was given to the fact that both patients believed that there was some connection between their nervousness and the alopecia.

Conclusions as to the cause of this disease cannot be made from the case material here presented. It does, however, tend to support the opinion of many authors that alopecia areata has a large psychogenic component. Anxiety was a symptom common to both patients and had been present for many years. Together with the anxiety there was evidence of great difficulty in controlling hostility with the need for an obsessive framework in order to keep the hostile impulses under control. The fact that both patients presented similar findings together with the fact that many patients with neurodermatitis have similar psychiatric disturbances indicated the need for further intensive work in this field.

Preventive Medicine and Industrial Health Program of the Air Materiel Command

Otis B. Schreuder, *Brigadier General, U. S. A. F. (MC)* (1)

THE Air Materiel Command (AMC) of the United States Air Force (2) buys, supplies, and maintains equipment for the entire Air Force. To accomplish its mission, AMC is organized, to a great extent, like civilian industry and has a large number of civilian employees. Although the medical problems of the AMC are the same as other Air Force commands, there are fewer requirements for large hospitals and more need for emphasis on preventive medicine and industrial health.

Military personnel receive complete care for all diseases and injuries. Civilian personnel receive on-the-job care of nonoccupational illness but complete care for occupationally-incurred illness or injury. Most disabilities in civilian employees are cared for by civilian physicians but may be treated in military hospitals if other facilities are not available.

The aim of the preventive medicine and industrial health program is to increase the quantity and quality of production by decreasing sick absenteeism, affording proper placement of the physically handicapped, and correcting the environmental and physical factors that affect health and proficiency. Each prospective employee is given a thorough physical examination including urinalysis, blood serologic tests, roentgenographic examination of the chest, and, in some cases, more extensive procedures. At this point some employees are classified as handicapped and will be assigned tasks commensurate with their abilities.

Once the employee is assigned to a job, his work area and job methods are constantly studied to guard against harmful effects created by his environment. Individuals who work under potentially hazardous

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(2) Wright-Patterson Air Force Base, Dayton, Ohio.

conditions are given periodic physical and laboratory examinations. The findings are recorded and serve not only as an index of the employee's health but also are used for statistical studies. Under the supervision of industrial hygiene engineers, surveys are constantly conducted on atmospheric contaminants, work methods, ventilation, use of protective equipment, and other factors affecting the health and well-being of employees.

As part of the Industrial Health Program of the Air Force, it is imperative that the toxicologic properties and industrial medical implications of new and untried chemicals and other materials be known. Adequate toxicologic data on many chemical compounds is either lacking or scanty. To obtain information about these compounds, close liaison is maintained with industrial medical personnel in the Army, Navy, and other federal and civilian plants, institutions, and universities.

Because few AMC air bases have sufficient personnel to warrant the establishment of a Mental Hygiene Service, the basic concept of the Service is carried on by regularly assigned physicians and nurses. The employee is treated as a psychophysical entity.

It is recognized that all employees cannot perform efficiently unless they are adequately nourished. To this end the Air Force maintains a high standard of food quality and has available all the knowledge of procuring, transporting, storing, issuing, and preparing the food supply according to accepted sanitary and hygienic practices. Education of the employee in good health habits, proper eating, adequate exercise, and the basic understanding of practical human physiology is considered essential to the improvement of his physical and mental well-being.

Continuing emphasis is placed upon the maintenance of an adequate immunization status for military personnel so that they can be moved to overseas areas on short notice. A program to stimulate civilian employees to keep their immunizations current is also in force.

Necessary medical surveillance over water supply and waste disposal activities and the control of insects and rodents is maintained.

As part of the preventive medicine program, increasing attention has been given to the problems in biological defense, including atomic, bacteriologic, and chemical warfare. Although much of the defensive activities are the responsibility of Air Force operations, a large part of the planning and protective program is an extension of the activities of preventive medicine personnel.

CONCLUSIONS

The aim of the preventive medicine and industrial health program of the Air Materiel Command is primarily to maintain the health of both civilian and military employees at the highest possible level so that

their productive efficiency may be greater. Enlightened methods of selection and assignment of personnel and of improvement of work environment and job methods have assumed a tremendous role in this program.

BOOK REVIEWS

The Auricular Arrhythmias, by *Myron Prinzmetal,* M. D., *Eliot Corday,* M. D., *Isidor C. Brill,* M. D., *Robert W. Oblath,* M. D., *H. E. Kruger,* and Associate Authors, *Joshua Fields,* M. D., *Walter Flieg,* M. D., *Alfred Goldman,* M. D., *Harold Karpman,* A. B., *S. Rexford Kennamer,* M. D., *John A. Osborne,* M. D., *Alvin L. Sellers,* M. D., and *L. Allen Smith,* M. D. 387 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $16.50.

The material in this monograph is divided into 18 chapters and an appendix which includes a detailed description of the various types of equipment and technics used in the study. The subject matter is presented in a simple and readily understandable manner and is well illustrated. The authors describe results of animal experiments producing auricular arrhythmias by chemical, mechanical, and electrical stimulation of the auricles, using cinematographic, electrocardiographic, and oscillographic methods to demonstrate the physical and electrical changes which occur in the auricles during the course of these abnormal rhythms. They offer convincing evidence to support the concept of the unitary nature of auricular arrhythmias and have established a relationship between the experimental studies and clinically observed auricular arrhythmias in man.

The chapter on pharmacologic considerations in auricular arrhythmia and treatment of arrhythmias is concise, well-written, and documented by excellent references to current literature. The internist and cardiologist should find these chapters of great interest. Another chapter, dealing with ventricular arrhythmias, includes a report of the preliminary observations in the Wolff-Parkinson-White syndrome. The authors' concept of this conduction disturbance as being caused by physiologic rather than anatomic changes is interesting and should stimulate further thought and investigation.

The authors have missed an excellent opportunity to further the effort, made by the committee for Standard Nomenclature of Diseases and Operations for the Heart (Fourth Edition, 1952) and Dr. Paul D. White, to revise the nomenclature and eliminate the confusion in terminology and usage of the terms "atrium" and "auricle." Discarding the term "auricle" and using "atrium" and "atrial appendage" for "auricle" and "atrial arrhythmias," would have been helpful.

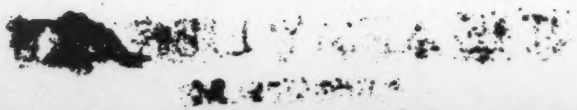
The publisher should be congratulated for the excellent arrangement of the text material as well as for the color engravings and the choice of paper. The price, however, may prevent widespread use of this monograph.—*Col. T. W. Mattingly, MC, U. S. A.*

Diagnostic Bacteriology, A Textbook for the Isolation and Identification of Pathogenic Bacteria, by *Isabelle Gilbert Schaub,* A. B., Technical Director, Clinical Bacteriology Laboratories, The Johns Hopkins Hospital; Instructor in Bacteriology, The Johns Hopkins University School of Medicine and the Nurses Training Schools, The Johns Hopkins Hospital and Sinai Hospital, and *M. Kathleen Foley,* M. A., Instructor in Bacteriology, Department of Biological Sciences, College of Notre Dame of Maryland; Formerly Bacteriologist in Charge of the Diagnostic Bacteriological Laboratory of the Medical Clinic, The Johns Hopkins Hospital. 4th edition. 356 pages. The C. V. Mosby Co., St. Louis, Mo., publisher, 1952. Price $4.50.

This much-needed supplement to the textbooks on medical bacteriology was first published as a laboratory manual in 1940. The wealth of new material advanced in the past 12 years has necessitated 3 revisions. This new edition is conveniently divided into 5 parts: Part I, Bacteriological Methods, includes staining technics, selection and sterilization of media, and the use of specific media for the isolation of the various bacteria; Part II, Bacteriological Diagnosis, includes the type of media that should be employed in relation to the source of the pathologic specimen, the possible pathogens that may be encountered, and the means of identification of the pathogens isolated; Part III, Determination of the Sensitivity of Bacteria to Antibiotics, includes the technics for the tube method and the disk method; Part IV, Serological Diagnosis, includes the quellung test and the various agglutination tests; Part V, Media, Stains, and Staining Technique, Reagents and Tests, includes the formulas and means of preparation of these reagents.

A noteworthy feature of this book is the bibliography. Many of the recent technics given in the text could previously only be found by combing the literature. In a few instances certain of these technics have been too readily presented by the authors without complete confirmation of their value, i. e., the use of thymol crystals for the sterilization of carbohydrates to be used in fermentation tests. The reader is, however, stimulated to try the new methods advocated and most of them prove to be worth-while timesavers in the isolation and identification of pathogenic bacteria. This textbook is highly recommended to both the student of bacteriology and to the technician in the field.

—*Maj. A. Leibovitz, MSC, U. S. A.*



BOOKS RECEIVED

The Pathology of Diabetes Mellitus, by *Shields Warren,* M. D., Sc. D., Departments of Pathology of the New England Deaconess Hospital and the Harvard Medical School, Boston, Mass.; Director of the Division of Biology and Medicine, U. S. Atomic Energy Commission, and *Philip M. LeCompte,* M. D., Departments of Pathology, of the Faulkner Hospital and the Harvard Medical School, Boston, Mass. 3d edition, thoroughly revised. 336 pages; 112 illustrations; 3 colored plates. Lea & Febiger, Philadelphia, Pa., publisher, 1952. Price $7.50.

Rx for Medical Writing, A Useful Guide to Principles and Practice of Effective Scientific Writing and Illustration, by *Edwin P. Jordan,* M. D., and *Willard C. Shepard.* 112 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publisher, 1952.

A Textbook of Evolution, by *Edward O. Dodson,* Assistant Professor of Zoology, University of Notre Dame. 419 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publisher, 1952.

Air Pollution, Proceedings of the United States Technical Conference on Air Pollution. Sponsored by the *Interdepartmental Committee on Air Pollution. Louis C. McCabe,* Chairman. 847 pages; illustrated. McGraw-Hill Book Co., Inc., New York, N. Y., publishers, 1952. Price $12.50.

Cellular Changes With Age, by *Warren Andrew,* Ph. D., M. D., Professor of Anatomy and Chairman of Department, The George Washington University School of Medicine, Washington, D. C. American Lecture Series Publication No. 127, A Monograph in American Lectures in Anatomy. 74 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $2.50.

Neurosurgery, An Historical Sketch, by *Gilbert Horrax,* M. D., Sc. D., Chief of Neurosurgical Service, The Lahey Clinic; Neurosurgeon, New England Baptist Hospital and New England Deaconess Hospital, Boston, Mass. American Lecture Series Publication No. 117, A Monograph in American Lectures in Surgery. 135 pages; illustrated. Charles C Thomas, Publisher, Springfield. Ill., 1952. Price $3.75.

The Human Blood Groups, Utilized in Disputed Paternity Cases and Criminal Proceedings, by *P. H. Andresen,* Chief, Municipal Blood Bank, Bispebjerg Hospital; Formerly Chief, Serological Department, University Institute of Legal Medicine, Copenhagen, Denmark. 115 pages. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $3.75.

Current Therapy 1952, Latest Approved Methods of Treatment for the Practicing Physician. Editor, *Howard F. Conn,* M. D., Consulting Editors, *M. Edward Davis, Vincent J. Derbes, Garfield G. Duncan, Hugh J. Jewett, William J. Kerr, Perrin H. Long, H. Houston Merritt, Paul A. O'Leary, Walter L. Palmer, Hobart A. Reimann, Cyrus C. Sturgis,* and *Robert H. Williams.* 849 pages. W. B. Saunders Co., Philadelphia, Pa., publishers, 1952.

ARMY LIBRARY

The 1951 Year Book of Neurology and Psychiatry, November 1950 - October 1951, Neurology edited by *Roland P. Mackay,* M. D., Professor of Neurology, University of Illinois; Attending Neuropsychiatrist, St. Luke's Hospital, Chicago; Psychiatry edited by *Nolan D. C. Lewis,* M. D., Director, New York State Psychiatric Institute and Hospital; Professor of Psychiatry, Columbia University. 556 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1952. Price $5.50.

Living in Balance, by *Frank S. Caprio,* M. D. 246 pages. The Arundel Press, Inc., Washington, D. C., publisher, 1951. Price $3.75.

The 1951 Year Book of Orthopedics and Traumatic Surgery (November 1950 - November 1951), edited by *Edward L. Compere,* M. D., F. A. C. S., Associate Professor of Bone and Joint Surgery, Northwestern University Medical School; Chairman, Departments of Orthopedic Surgery, Wesley Memorial and Children's Memorial Hospitals; Consultant Orthopedic Surgeon, Chicago Memorial Hospital; Consultant in Orthopedics, U. S. Naval Hospital, Great Lakes, Ill. 380 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1952. Price $5.50.

Handbook of Cardiology for Nurses, The Disease, The Patient, Modern Concepts of Treatment, by *Walter Modell,* M. D., F. A. C. P., Assistant Professor, Cornell University Medical College; Associate Cardiologist, The Beth Israel Hospital and The Hospital for Joint Diseases. Foreword by *Edna L. Fritz,* R. N., Assistant Professor of Medical Nursing, Cornell University, New York Hospital School of Nursing. 246 pages; illustrated. Springer Publishing Co., Inc., New York, N. Y., publisher, 1952. Price $3.50.

Oral Medicine, Diagnosis and Treatment, by *Lester W. Burket,* A. B., D. D. S., M. D., Sc. D., Professor of Oral Medicine and Dean, School of Dentistry, University of Pennsylvania; Professor of Oral Medicine, Graduate School of Medicine, University of Pennsylvania; Honorary Professor, National University, Bogotá, Colombia; Chief Oral Medicine Service, Philadelphia General Hospital; Consultant to the Army, Navy, and Veterans Administration, with a chapter on Oral Cancer by *S. Gordon Castigliano,* B. A., B. S., M. D., F. A. C. S., Chief, Department of Head and Neck Tumors, American Oncologic Hospital, Philadelphia; Professor of Oncology, Temple University School of Dentistry, Philadelphia; Associate in Oncology, Graduate School of Medicine, University of Pennsylvania, Philadelphia. 2d edition. 575 pages; 372 illustrations including 40 subjects in color. J. B. Lippincott Co., Philadelphia, Pa., publishers, 1952. Price $14.

Fundamentals of Psychiatry, by *Edward A. Strecker,* M. D., ScD., LL. D., Litt. D., F. A. C. P., Professor of Psychiatry and Chairman of the Department, Undergraduate and Graduate Schools of Medicine, University of Pennsylvania; Psychiatrist to the Pennsylvania, Philadelphia, and Germantown Hospitals; Consultant and Chief-of-Service, Institute of the Pennsylvania Hospital; Consultant to the Surgeons General, U. S. Army and U. S. Navy, and formerly Consultant for the Secretary of War to the U. S. A. A. F.; Senior Consultant in Psychiatry, Veterans Administration; Consultant in Mental Hygiene, U. S. P. H. S.; Chairman, Committee on Psychiatry, National Research Council; Chairman, Committee on Psychiatry, American National Red Cross. 5th edition. 250 pages; 21 illustrations. J. B. Lippincott Co., Philadelphia, Pa., publishers, 1952. Price $4.50.

Mind, Perception and Science, by *W. Russell Brain,* D. M., F. R. C. P., President of the Royal College of Physicians of London. 90 pages. Charles C Thomas, Publisher, Springfield, Ill., 1951. Price $2.50.

Clinical Dental Roentgenology, Technic and Interpretation, including roentgen studies of the child and the adolescent, by *John Oppie McCall,* D. D. S., F. A. C. D., Former Director, The Murry and Leonie Guggenheim Dental Clinic; Former Professor of Periodontia, New York University College of Dentistry; Consultant to the Dental Service, New York Hospital; Associate in Public Health and Preventive Medicine, Cornell University College of Medicine; Oral Diagnostician, New York Eye and Ear Infirmary; Diplomate, American Board of Periodontology; former Lieutenant Commander, Dental Corps, United States Naval Reserve, and *Samuel Stanley Wald,* D. D. S., F. A. C. D., Clinical Professor of Oral Cancer and Roentgenology, New York University College of Dentistry; Lecturer in Dental Roentgenology and Oral Diagnosis, New York University College of Medicine and Bellevue Medical Center and Postgraduate Medical School; Former Head of the Department of Diagnosis and Roentgenology, The Murry and Leonie Guggenheim Dental Clinic and School for Dental Hygienists; Special Lecturer in Roentgenology and Oral Diagnosis, U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md.; Consultant in Charge of Roentgenology and Oral Diagnosis, U. S. Naval Hospital, St. Albans, N. Y.; Consultant in Charge of Roentgenology and Oral Diagnosis, Dental Clinics of the Community Service Society of New York; Diplomate in Oral Surgery, New York State Board of Oral Surgery; Captain, Dental Corps, United States Naval Reserve. 3d edition. 384 pages; 1,277 illustrations on 475 figures. W. B. Saunders Co., Philadelphia, Pa., publishers, 1952.

Office Endocrinology, by *Robert B. Greenblatt,* B. A., M. D., C. M., Professor of Endocrinology, Medical College of Georgia; Chief of Endocrinology, University Hospital; Director of Endocrine Clinic, University Hospital; Consultant to the Surgeon General, U. S. Army; Consultant to Lenwood Hospital, U. S. Veterans Facility; Special Consultant, United States Public Health Service; Diplomate of American Board of Obstetrics and Gynecology. With a Foreword by *G. Lombard Kelly,* M. D., President, Medical College of Georgia. 4th edition. 561 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $10.50.

Surgery and the Endocrine System, Physiologic Response to Surgical Trauma, Operative Management of Endocrine Dysfunction, by *James D. Hardy,* M. D., F. A. C. S., Assistant Professor of Surgery, University of Tennessee Medical College. 153 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publishers, 1952.

Annual Review of Physiology, by *Victor E. Hall,* Editor, University of California School of Medicine, Los Angeles; *Jefferson M. Crismon,* Associate Editor, Stanford University; *Arthur C. Giese,* Associate Editor, Stanford University Volume 14. 589 pages. Annual Reviews, Inc., and the American Physiological Society, Stanford, Calif., publishers, 1952. Price $6.

Military Medical Manual, March 1952. 7th edition. 761 pages; illustrated. The Military Service Publishing Co., Harrisburg, Pa., publisher, 1952.

Clot Retraction, by *O. E. Budtz-Olsen,* M. D. (Cape Town), Wernher and Beit Laboratories, University of Cape Town. 149 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill. 1951. Price $5.50.

Arithmetic of Pharmacy, by *Charles H. Stocking,* M. S., Professor of Pharmacy and Dean of the College of Pharmacy, University of Michigan; and *Elmon L. Cataline,* Ph. D., Professor of Pharmacy and Dean of the College of Pharmacy, University of New Mexico. Based on the original text by *Alviso B. Stevens,* Ph. D., Late Professor of Pharmacy, University of Michigan. 8th edition. 148 pages. D. Van Nostrand Co., Inc., New York, N. Y., publisher, 1952.

The Metabolic Response to Surgery, by *Francis D. Moore,* M. D., Moseley Professor of Surgery, Harvard Medical School, Surgeon-in-Chief, Peter Bent Brigham Hospital, Boston, Mass., and *Margaret R. Ball,* A. B., Department of Surgery, Harvard Medical School, Laboratory for Surgical Research, Peter Bent Brigham Hospital, Boston, Mass. Metabolic Diagrams by *Mildred B. Codding,* A. B., M. A., Surgical Artist, Department of Surgery, Harvard Medical School, Peter Bent Brigham Hospital, Boston, Mass. American Lecture Series Publication No. 132, A Monograph in American Lectures in Surgery. 156 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $7.50.

Doctors Differ, Five Studies in Contrast: John Elliotson, Hugh Owen Thomas, James Mackenzie, William Macewen, and R. W. Philip, by *Harley Williams.* 239 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $5.50.

Functional Mammalian Anatomy, With Special Reference to the Cat, by *William T. Taylor,* Ph. D., Professor of Biology, Georgetown University, and *Richard J. Weber,* Ph. D., Professor of Biology, Georgetown University. Illustrated by *Thomas Courtney Lee.* 575 pages. D. Van Nostrand Co., Inc., New York, N. Y., publisher, 1951.

The Fight Against Tuberculosis, An Autobiography, by *Francis Marion Pottenger,* M. D. 276 pages; illustrated Henry Schuman, New York, N. Y.,publisher, 1952. Price $4.

Diabetes and Pregnancy, by *Ralph A. Reis,* B. S., M. D., F. A. C. S., Professor, Obstetrics and Gynecology, Northwestern University Medical School, Senior Attending Obstetrician and Gynecologist, Michael Reese Hospital; *Edwin J. DeCosta,* B. S., M. D., F. A. C. S., Assistant Professor, Obstetrics and Gynecology, Northwestern University Medical School, Associate Attending Obstetrician and Gynecologist, Michael Reese Hospital, and *M. David Allweiss,* B. S., M. D., Associate in Medicine, Northwestern University Medical School, Associate Attending, Department of Medicine, Michael Reese Hospital, Chicago, Ill. American Lecture Series Publication No. 158, A Monograph in American Lectures in Gynecology and Obstetrics. 78 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1952. Price $2.50.

An Atlas of General Affections of the Skeleton, by *Sir Thomas Fairbank,* D. S. O., O. B. E., M. S., Hon. M. Ch. (Orth.), F. R. C. S., Consulting Orthopaedic Surgeon and Emeritus Lecturer in Orthopaedic Surgery, King's College Hospital; Consulting Surgeon, Hospital for Sick Children, Great Ormond Street; Emeritus Consulting Surgeon, Lord Mayor Treloar Orthopaedic Hospital, Alton; Honorary Consultant (Orthopaedic) to the Army. 411 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., publisher, 1951.

Blood Transfusion in Clinical Medicine, by *P. L. Mollison,* M. D., M. R. C. P., M. R. C. S., Director, Medical Research Council's Blood Transfusion Research Unit, Lecturer in the Department of Medicine, Post-graduate Medical School of London, with a Foreword by *Sir Alan N. Drury,* C. B. E., F. R. S. 456 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1951. Price $8.

Antibiotics, being the 52nd Robert Boyle Lecture delivered before the Oxford University Scientific Club on June 1, 1951, by Professor *Sir Howard Florey,* F. R. S., M. A., Ph. D., Sir William Dunn School of Pathology, Oxford. 35 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1951. Price $1.50.

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